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THE OIL WEEKLY

Devoted Exclusively To The Production and Transportation of Oil and Gas

Engineering News Statistics

The BIG 4

Design, material, skilled workmanship and continuous tests give to every Hughes product the qualities necessary for exceptional performance.

Operators, Contractors, and Drillers throughout the rotary fields of the world know they can depend on the economy, safety, and long life of Hughes Tools in operation.

IN Performance

Hughes
ROCK BITS
CORE BITS
TOOL JOINTS
VALVES

At Your Supply Store

Hughes Tool Company

Service Plants Los Angeles, Calif. Oklahoma City, Okla. Midland, Texas

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Export Offices Woolworth Building New York City

November 14, 1930

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GLOBE EXPANSION BIT

A New Addition to the Family.....

—of Globe Oil Tools

Eliminates Underreaming—Saving the Time, Labor Expense, and Hazard Incident to All Such Operations

TYPES "1" and "2"

Type "1" drills a maximum, full-gauge, over-sized hole, without underreaming.

In the Type "2" a considerable portion of the reaming edge has been eliminated, reducing side wall friction to such an extent that more footage, with faster drilling time, and with less weight, are obtained. This type was specially designed for use when the above advantages supersede in importance a full-gauge, over-sized hole.

Due to the short reaming edge of Type "2" the cutters actually decrease in diameter down to a point somewhat over the size of hole desired, as they become dull.

Both Types "1" and "2" are very simply and sturdily constructed. The only moving parts are the two cutters.

Send this coupon

FOR FULL DATA

Am interested in Globe Expansion Bit. Please send Bulletin 11-A.

Name .....

Address .....

You need this tool. Send coupon for full information.

GLOBE OIL TOOLS CO.

LOS NIETOS, CALIFORNIA

Successors to

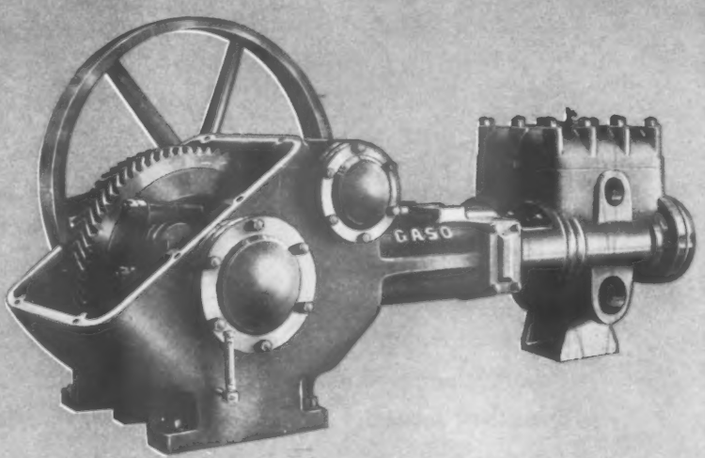
H. C. Smith Manufacturing Co., Inc. Wieman-Kammerer-Wright Co., Inc. National Tool & Metals, Inc.

Branches:

Ventura, Calif. Bakersfield, Calif. Taft, Calif. Hobbs, N. Mexico
Kettleman Hills, Calif. Oklahoma City, Okla.

The OIL WEEKLY. Issued weekly by the Gulf Publishing Co., 3301 Buffalo Drive, Houston, Texas. Subscription price $1.00 per year; 15 cents per copy. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879

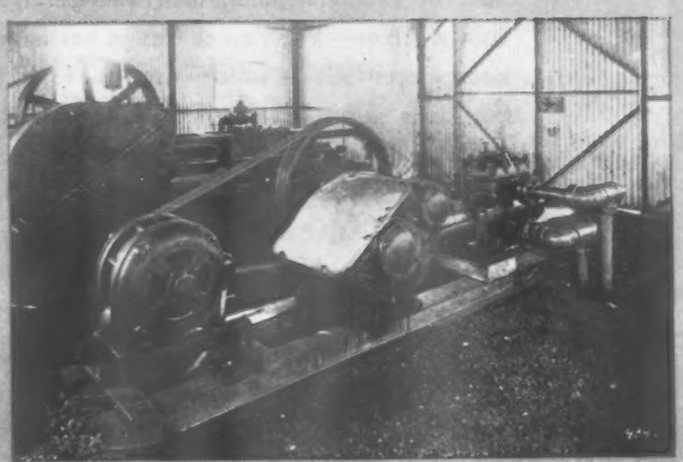
Smooth and Efficient Transmission of Power



Like the steadily pulling legs of a team of horses, the Continuous Tooth Herringbone Gears in the Gaso Fig. 1508 Pump transmit power with extreme smoothness. *These gears are 98.9 to 99.4% efficient.* Other features which contribute to unique efficiency in this pump are: a constant flood of clean oil on all moving parts; and Timken Tapered Roller Main and Pinion Bearings.

Send your requirements for detailed data on Gaso Pumps for any purpose

GASO PUMP & BURNER MFG. CO.
Tulsa, Oklahoma
Dallas, Texas New York, N. Y.



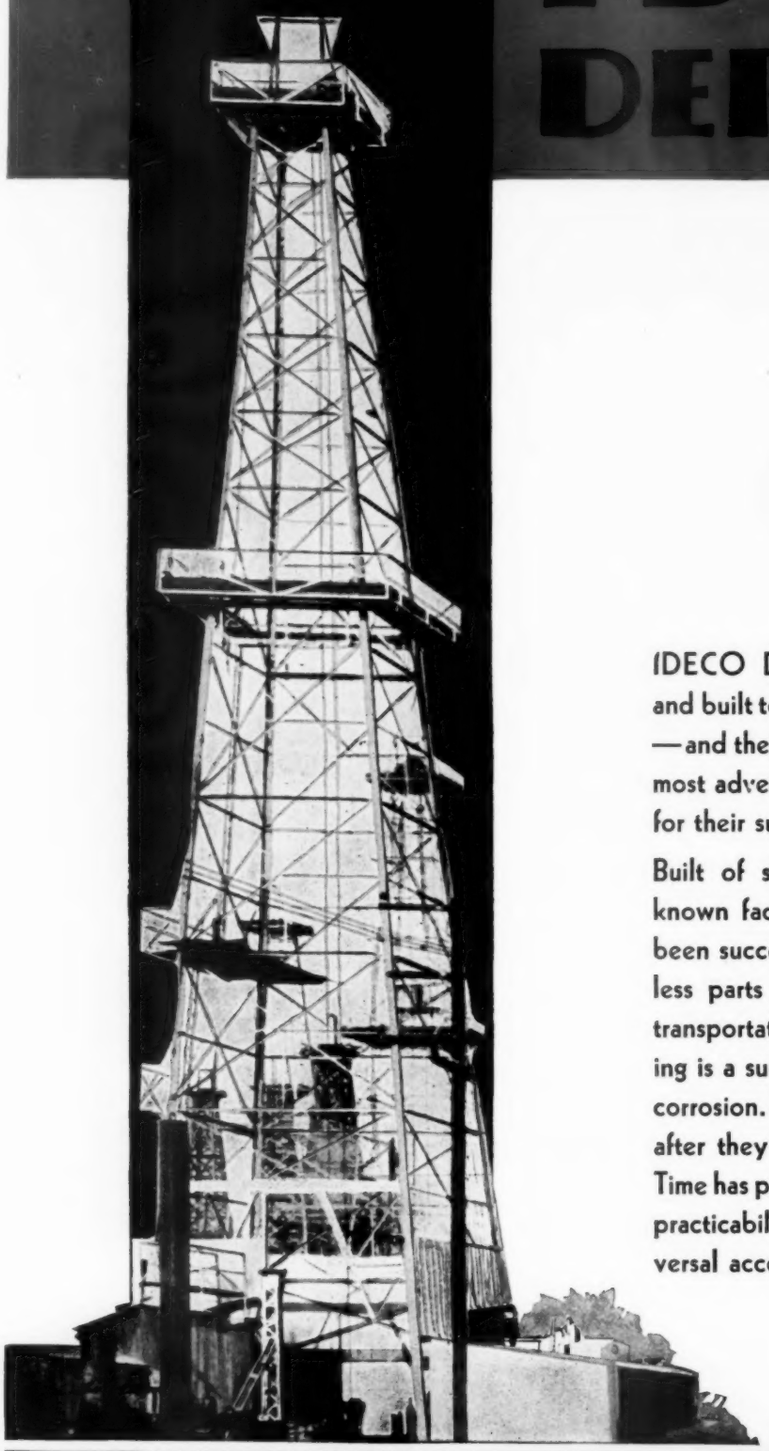
Left—A Gaso Fig. 1508 Enclosed Power Pump with V-rope drive from electric motor. This pump is also popular in a compactly mounted skidded unit with V-rope drive from Buda 50 H.P. Gas Engine. Or it can be arranged for belt drive, direct connected to engine through flexible coupling, or for motor drive through silent chain or reduction gears.

Interchangeable Liner Fluid End gives capacities varying from 63 bbls. per hour at 800 lbs. pressure to 250 bbls. per hour at 250 lbs. pressure.

GASO PUMPS

for every oil industry need

IDECO DERRICKS



IDECO Derricks are designed, engineered and built to meet definite service requirements—and their unequaled performance under the most adverse conditions has been responsible for their success.

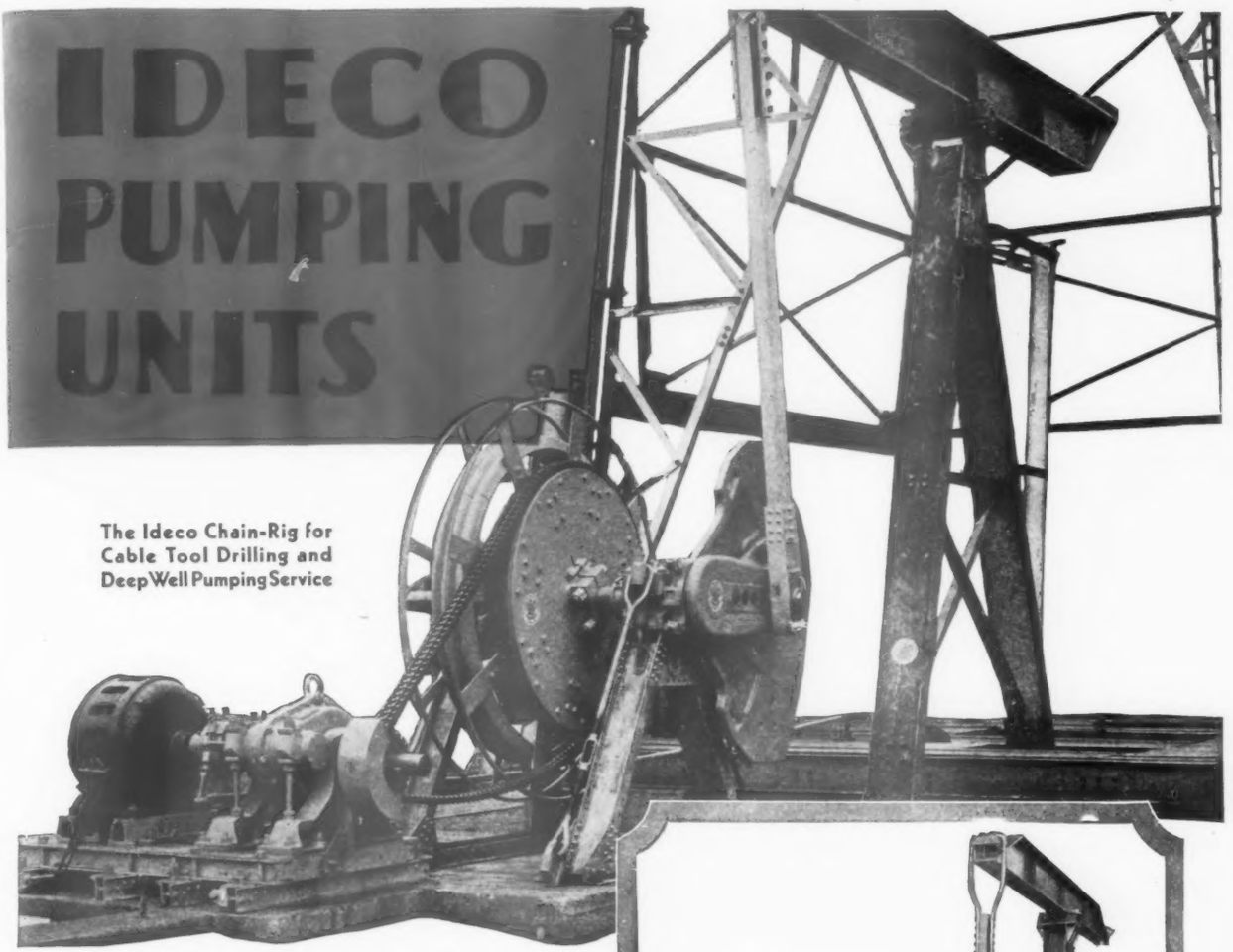
Built of structural steel, their strength is a known factor—The derrick design has never been successfully imitated—From 30 to 60% less parts saves loss of parts, erection and transportation cost—and the hot dip galvanizing is a successful protection against rust and corrosion. IDECO derricks will be in use long after they have been written off the books. Time has proven their economy—service, their practicability—and worldwide use, their universal acceptance by the oil industry.

The International Derrick & Equipment Company

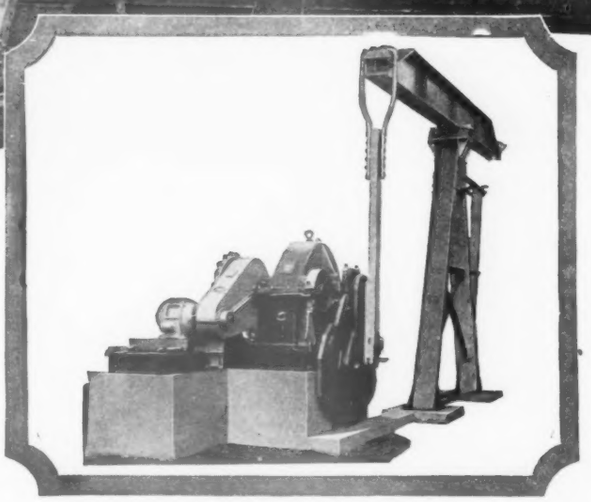
NEW YORK WICHITA TULSA OKLAHOMA CITY FORT WORTH HOUSTON SHREVEPORT

Branches in every

IDECO PUMPING UNITS



The Ideco Chain-Rig for Cable Tool Drilling and Deep Well Pumping Service



The Ideco Geared Pumping Unit for Heavy Duty Work

IDECO offers a complete and modern line of deep well Pumping Units. Embodied in their design are all of the features required for present-day deep pumping conditions.

Adaptable for use with electricity, steam or gas power, they combine strength and durability, which keep them on the job and reduce shutdown time; and efficiency and low power consumption, which lower the operating expense. Balance of rods and fluids is obtained through the use of the IDECO crank counter balance, which eliminates rod troubles. Nothing has been overlooked in these units to make them right—May we furnish you with further information?

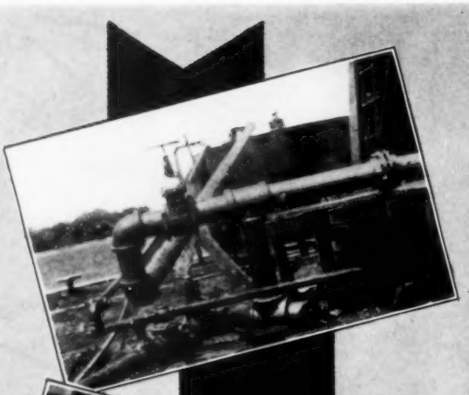
THE INTERNATIONAL DERRICK & EQUIPMENT COMPANY
BOYKIN IDECO LEIDECKER

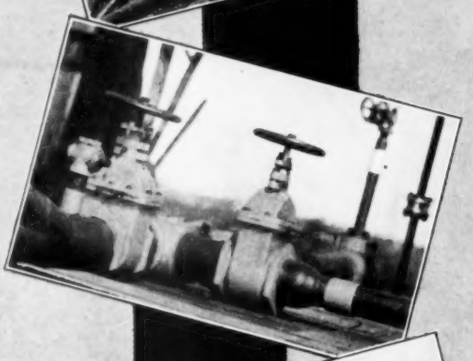
Columbus, Ohio Marietta, Ohio Beaumont, Texas Los Angeles, Calif.

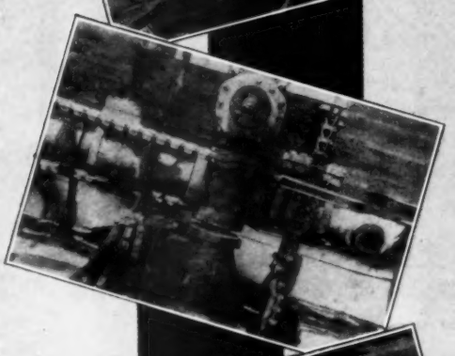
TORRANCE LONDON, ENGLAND BUENOS AIRES, ARGENTINE MARACAIBO, VENEZUELA

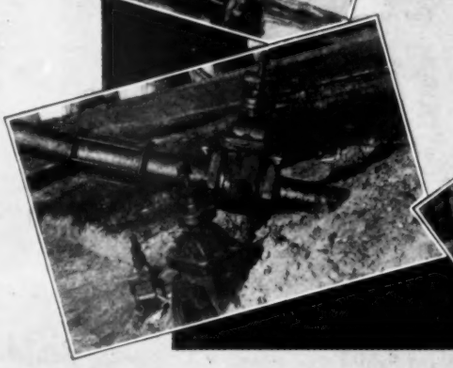
Important Oil Field

714



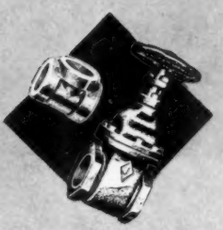






JARECKI

Valves and Fittings



It's in the field, under the stress of actual service, that JARECKI Valves and Fittings have won their reputation. At no time, from the days of Colonel Drake to the present, have they failed to deliver more service than was expected of them.

As science and industry have advanced so has JARECKI advanced. For seventy-eight years every development that would help to make Valves and Fittings more trustworthy has been either introduced or adopted by JARECKI. Today every Valve is tested under the actual pressures it will be expected to handle. . . . . Let the JARECKI Diamond "J" guide you to the logical source for "Everything Used or Needed about an Oil or Gas Lease."

Jarecki

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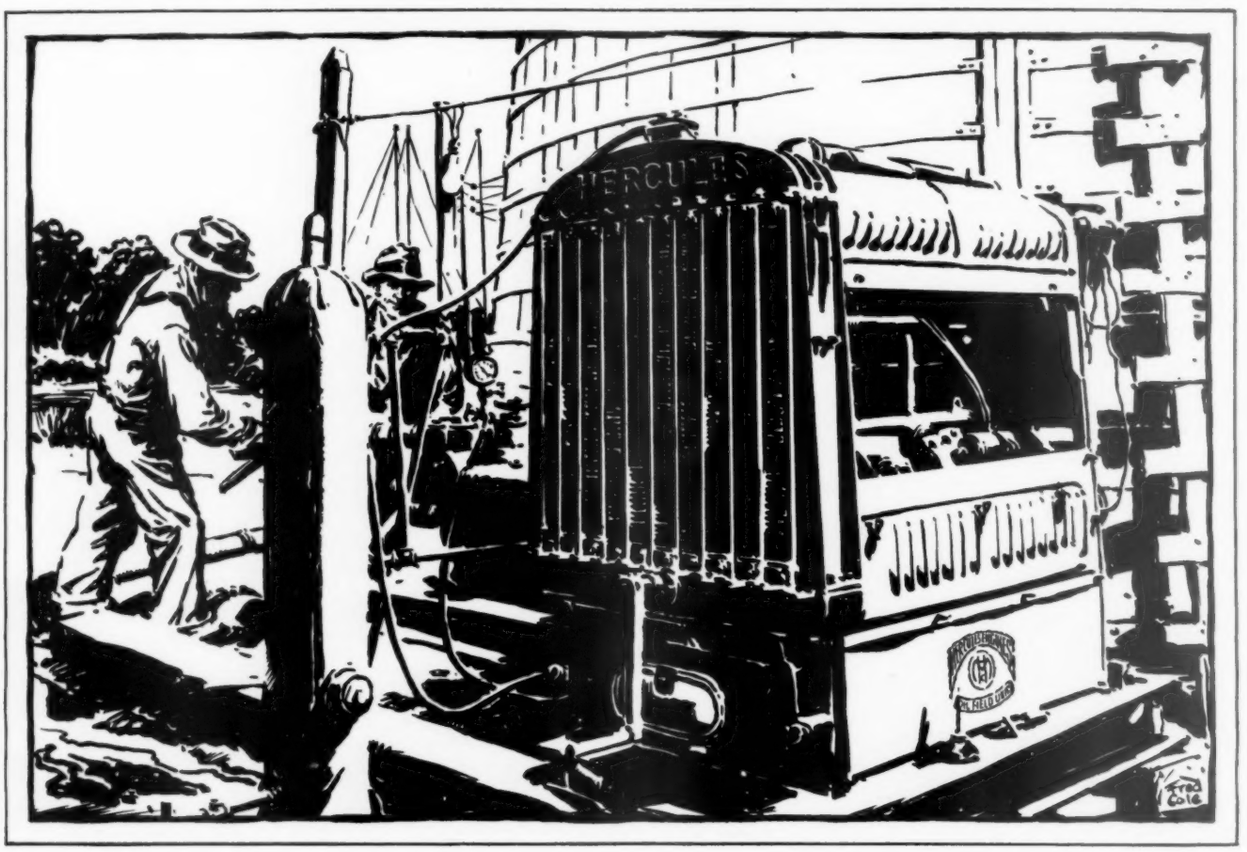
Branch stores at all important places in the Oil Country

Staff writers of *The* OIL WEEKLY are instructed to condense as much as possible the data they put into their news articles, because the average oil man is a busy man and has little time to "dig out" the important facts in a long-winded story.

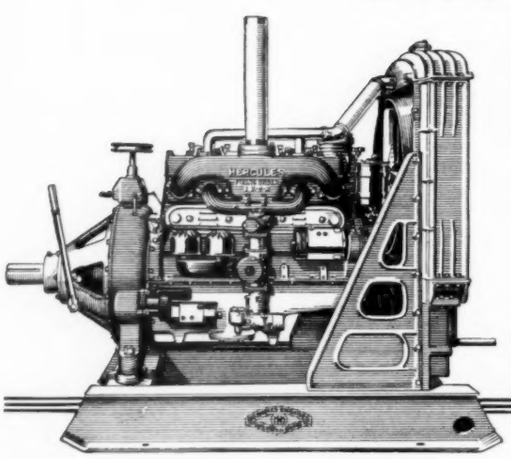
This means more news on different subjects for the reader, and at the same time it means he can find what he wants easily in *The* OIL WEEKLY.

This method of handling news is not an accident, but the result of a deliberate policy.

Bringing-Up Water for Rotary Drills with a Hercules-Powered Pump



Hercules Engines are recognized throughout the oil fields as "preferred power" for oil-producing operations. On Worthington pumps, as well as winches, compressors, arc welders, drilling rigs and other types of equipment Hercules Engines and Power Units have won a world-wide reputation for dependable service. This is but natural — Hercules' complete line of sturdy Four and Six Cylinder models, ranging in size from 15 to 175 H. P., is designed and built especially for grueling, heavy-duty requirements.



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HERCULES ENGINES

AMERICAN WIRE LINES

(ON THE YELLOW REELS)

A QUALITY ROPE FOR EVERY OIL FIELD JOB

"If Continental Sells It....There Is No Better" 7473

THE CONTINENTAL SUPPLY COMPANY
General Offices: ST. LOUIS
THE CONTINENTAL SUPPLY CO., LTD.
224 Traders Building, Calgary, Alberta, Canada
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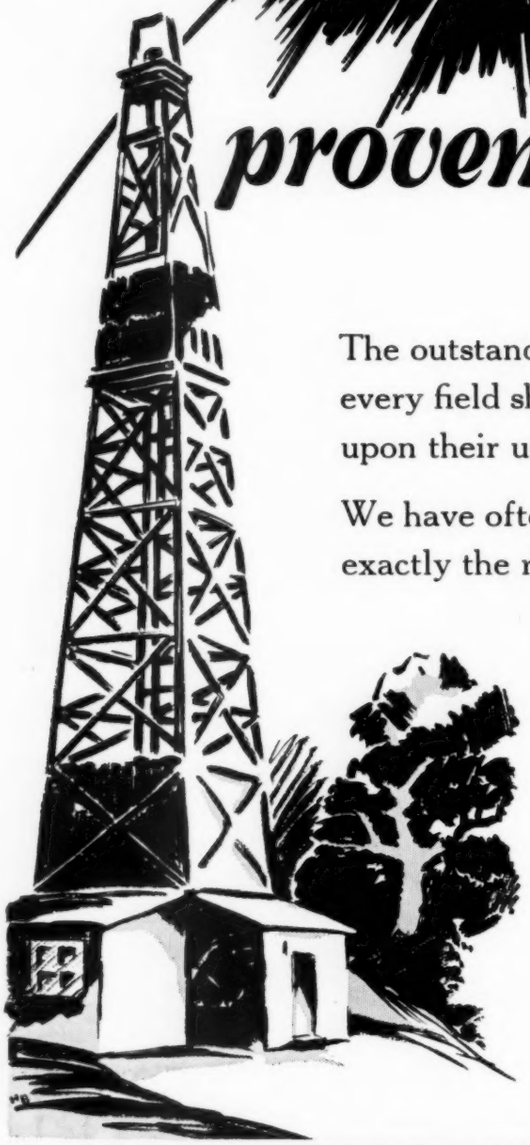
London Offices: 316-17 Dashwood House, Old Broad St., E. C. 2
CONTINENTAL EMSCO S. A. R., 7, Strada Eminescu, Ploesti, Romania

CONTINENTAL

WILLIAMSPORT WIRE LINES

proven in every field



The outstanding achievements of Williamsport lines in every field should be an incentive to every driller to insist upon their use.

We have often said a good driller plus a good wire line is exactly the right pair to draw to.

Let your next line be Williamsport and you'll appreciate this good advice, even if it does come from us.

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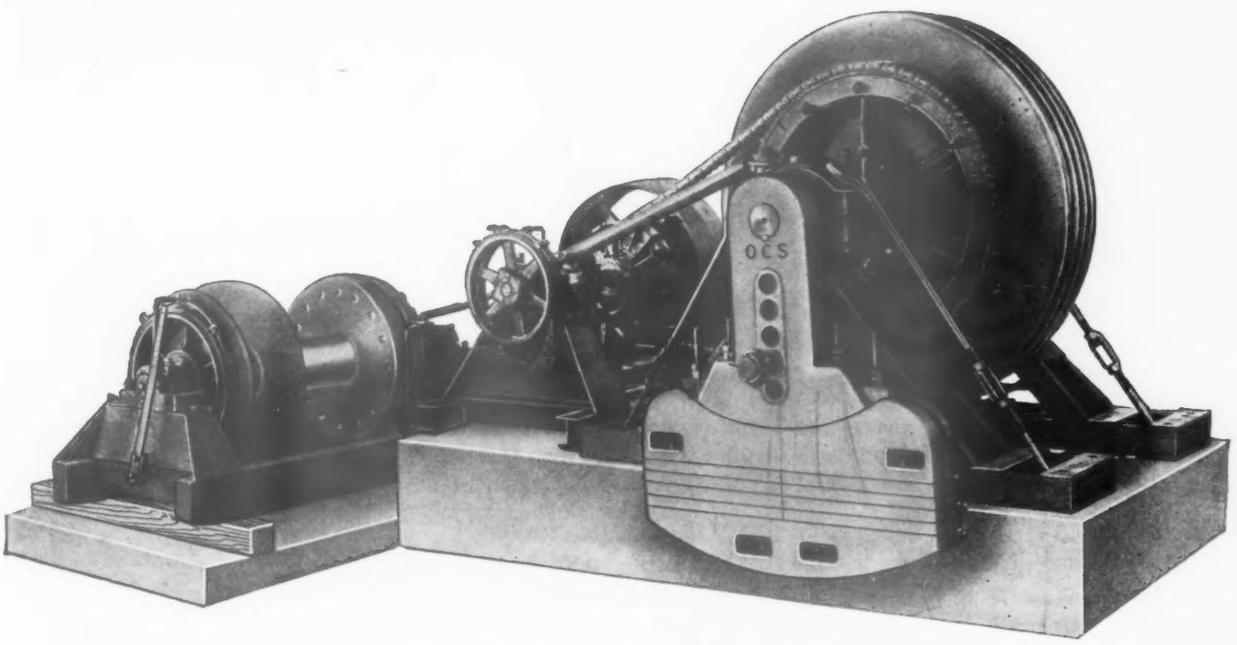
OCS

Universal Rig Fronts

Any Engine **Any Motor**



for Drilling or Pumping

The Deepest Wells in the World

Manufactured by

THE OIL COUNTRY SPECIALTIES MFG. CO.

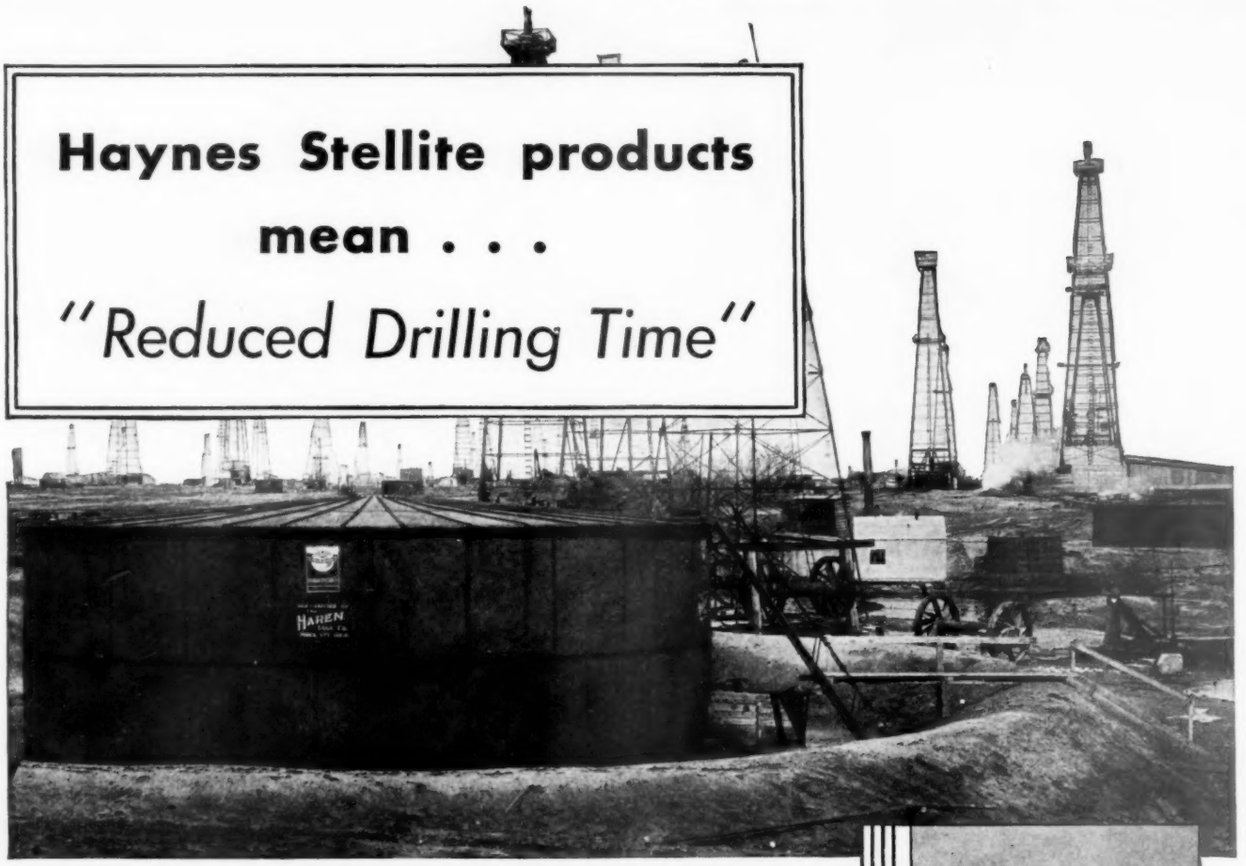
COFFEYVILLE, KANSAS

HYNES, CALIF. TULSA; SEMINOLE, OKLA. SWEETWATER; HOUSTON, TEXAS HOBBS, N. MEXICO

HILLMAN-KELLEY, INC., 2437-39 HUNTER ST., LOS ANGELES, CAL.

Haynes Stellite products mean . . .

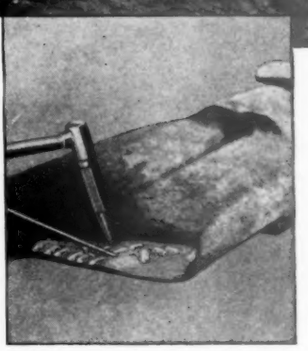
"Reduced Drilling Time"

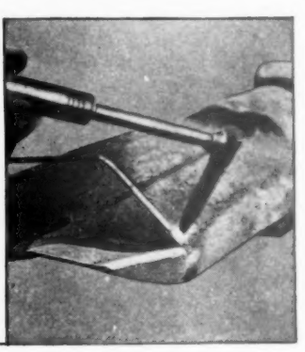


BITS hard-set with Haystellite and hard-faced with Haynes Stellite stay in the ground longer, increase footage and eliminate the necessity for reaming the hole to gauge. They mean fewer tool changes—fewer "round trips." Their economy is indelibly written into the final operating costs. Following are the actual figures from a test conducted in the Spindle Top Field of Texas, running tools hard-set with Haystellite alternately with tools hard-set with another diamond substitute:

	Footage	*Time Required*
Haystellite	390 ft.	36 hrs. or 10.83 ft. per hr.
Another Diamond Substitute .	279 ft.	40 hrs. or 6.98 ft. per hr.

This comparison is typical of the performance which has gained Haynes Stellite products recognition as the standard of comparison in the world's oil fields. Investigate. Write for our new book, "Haynes Stellite Products in the Oil Fields." Fill in and return the coupon today.





HAYNES STELLITE COMPANY

Unit of Union Carbide UCC *and Carbon Corporation*

CHICAGO DETROIT LOS ANGELES SAN FRANCISCO
CLEVELAND HOUSTON NEW YORK TULSA

General Offices and Works—Kokomo, Indiana

Haynes Stellite Welding Rod is also available from any of the 42 shipping points of the Oxweld Acetylene Company

HAYNES STELLITE · HAYSTELLITE · HASCROME · HASTELLOY

Quality Products, Fair Prices, Dependable Supply, Engineering Service

HAYSTELLITE TRADE MARK

Haynes Stellite Company, Kokomo, Indiana
Without obligation on my part, please send me your new book, "Haynes Stellite Products in the Oil Fields."

Name .....
Company ..... Position .....
Street Address .....
City ..... State .....

HAYNES STELLITE TRADE MARK

OW 11-14

"For every joint on every line"

TESTS that duplicate service conditions alone guarantee the dependability of pipe line joints. Victaulic Couplings withstand all pressures to the rupture point of the pipe—meet standard and special requirements. Inquiries are invited.

• • •

Mail the Coupon for Victaulic Bulletin

Available in every size from ¾ inch up—for steel, wrought iron, cast iron and spiral weld pipe—any pressure. See Sweet's page 451. Mail the coupon below.

VICTAULIC COMPANY OF AMERICA
26 Broadway New York

"For every joint on every line"

FLEXIBLE, LEAK-PROOF

VICTAULIC

REG. U. S. PAT. OFF.

PIPE COUPLINGS

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FOR OIL, GAS, WATER, SEWAGE, COMPRESSED AIR, ETC.

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For uses, installations, specifications and prices, fill in and mail this coupon.

VICTAULIC COMPANY OF AMERICA
26 Broadway New York
Please send me VICTAULIC BULLETIN No. 8

Name _____
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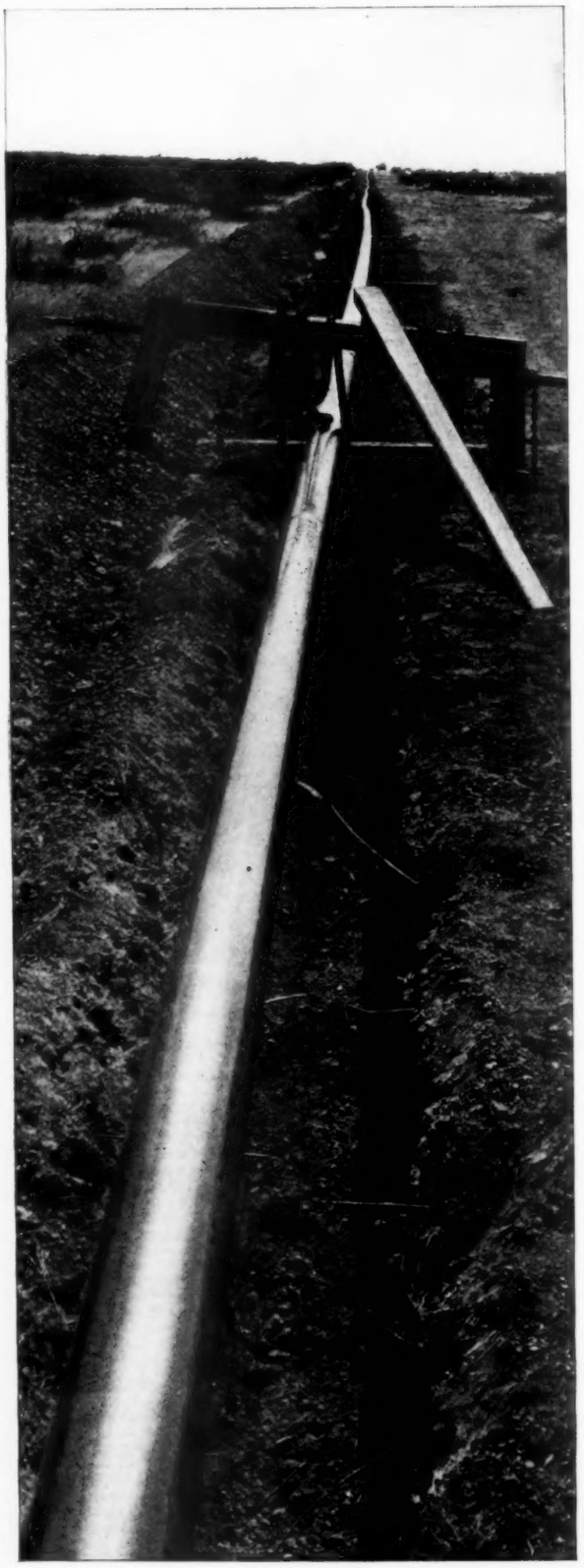


Bethlehem maintains at Houston, Texas, and Wilmington, Calif., well-assorted stocks of line pipe, ready for immediate shipment. Both threaded and coupled and plain-end pipe are included in these stocks.

STARTING THE JOB *RIGHT!*

In the building of a pipe line, as in any other construction project, the first and possibly the most important step is to insure the use of good materials.

The reasons for the growing tonnages of Bethlehem Steel Pipe that are going into pipe line construction are not hard to find. Bethlehem Pipe has smoothly finished ends, straight, uniform sections. It is made of steel of special composition, giving it exceptional working and welding qualities. Before shipment, every length of Bethlehem Pipe is subjected to most critical tests and inspections, making certain that it conforms in every way to Bethlehem standards of quality.

You can rely on Bethlehem Steel Pipe. It reflects the results of more than half a century of experience in the manufacture of good steel and steel products. Oil and Gas Companies are using it to an ever-increasing extent.

BETHLEHEM STEEL COMPANY
General Offices: Bethlehem, Pa.

District Offices: New York, Boston, Philadelphia, Baltimore, Washington, Atlanta, Pittsburgh, Buffalo, Cleveland, Cincinnati, Detroit, Chicago, St. Louis

Pacific Coast Distributor: Pacific Coast Steel Corporation, San Francisco, Los Angeles, Portland, Seattle, Honolulu

Export Distributor: Bethlehem Steel Export Corporation, 25 Broadway, New York City

BETHLEHEM STEEL PIPE

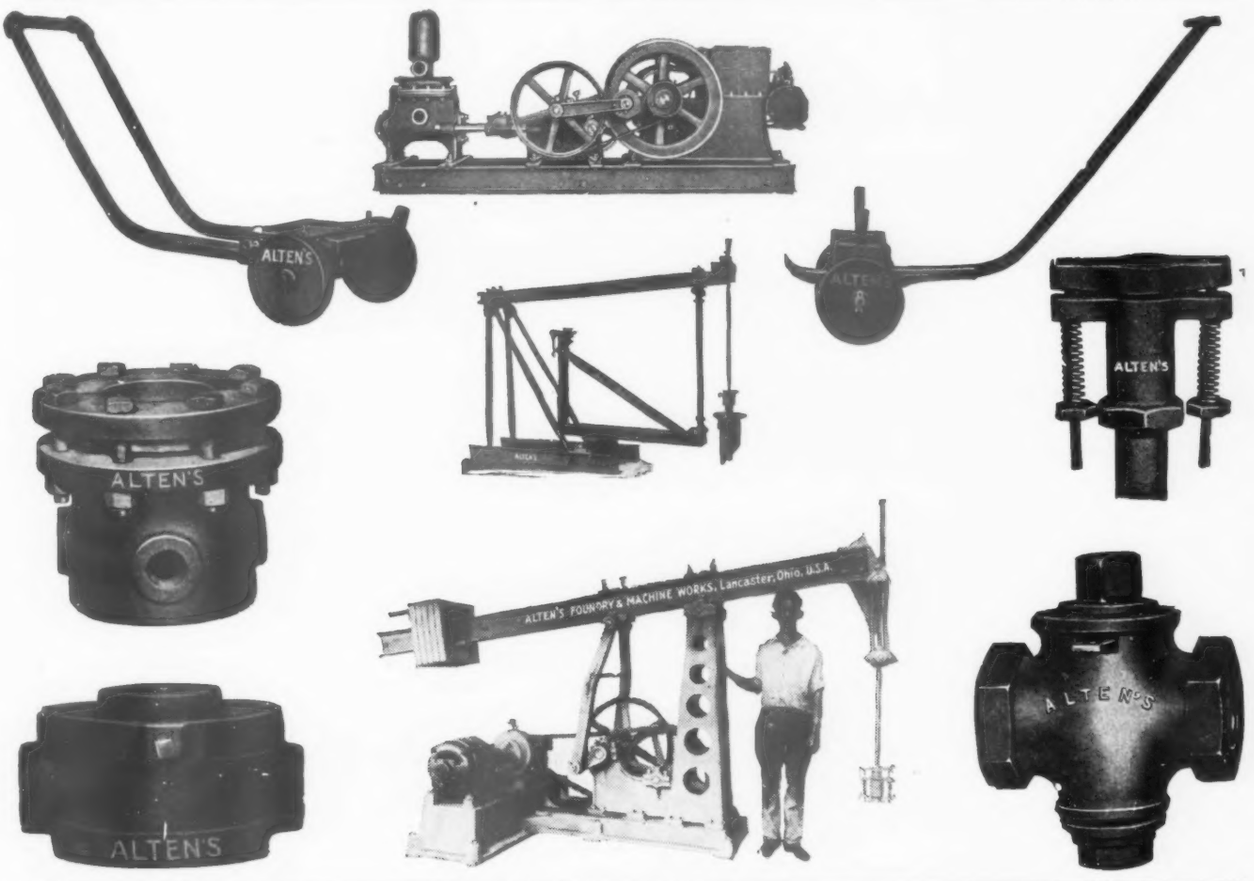
ALTEN'S

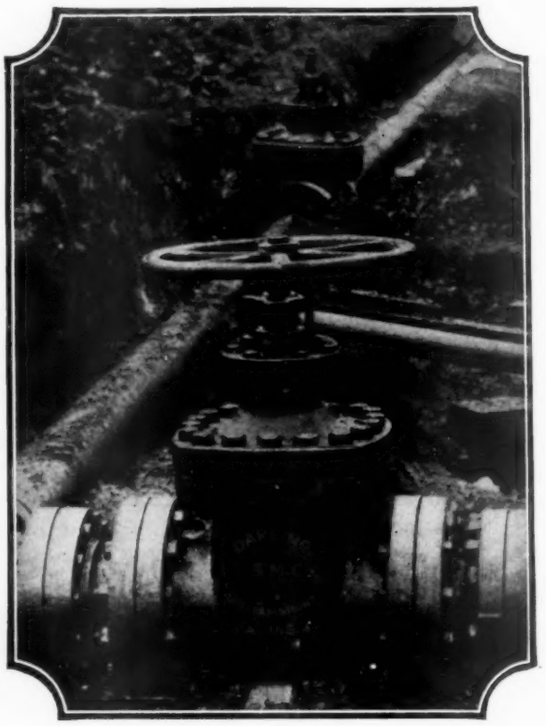
Look for this Name at Your Supply House

THERE are over a hundred different items in the Alten line of oil field equipment. Look at any one or several of them in which you are particularly interested. Notice how carefully they are made, how perfectly they are designed to do their work smoothly and efficiently. This quality of manufacture comes from an experience of over 40 years in building a line of quality products for the oil fields. It is your guarantee of perfect satisfaction . . . an assurance of dollar for dollar value at all times.

Alten's Foundry & Machine Works

Established 1889 **LANCASTER, OHIO**





Easy to Operate —but Always Tight

If a valve operates with difficulty, permitting a small volume of gas to pass through, it means expense in repairs and delay in getting into production, loss of gas and wages paid for unproductive work.

Darling Gate Valves cover all the points required for a perfect valve, regardless of the severity of service. They last for years—they seldom need repairing or replacing. And in spite of their ease of operation, they always stay tight.

TRADE DARLING MARK

The tests we insist upon giving *all* Darling Gate Valves, regardless of type or size, before they leave our factory, are far more severe than the service they will meet. *Every* Darling Gate Valve is tested at its rated pressure and held under this test pressure until inspection is completed. It is our assurance of their uniform high quality.

Construction details will be gladly sent to those interested.

DARLING VALVE & MANUFACTURING CO.
Williamsport, Pa.
New York Los Angeles Oklahoma City Houston
Mid-Continent Distributors:
Frick-Reid Supply Corp. International Supply Co.
Foreign Sales Manager: H. M. HEIN
Room 1405—152 West 42nd Street, New York, N. Y.

DARLING GATE VALVES

You Bet!

there's a genuine JOHNS-MANVILLE

...at less than you're paying now!

THERE are still a few well diggers, tool pushers, field and drilling superintendents and purchasing agents who don't realize that, for less than they are now paying, they can buy genuine Johns-Manville *machine* curved brake lagging for their rigs. No matter what make or type of draw-works you're using, any T. T. Word Supply Store can fit it — anything from a Fordson Winch to a big Oilwell, National Ideal, Emsco, Boykin, Gumbo Buster, or what have you?

You get a brake lagging made by the world's largest manufacturer of asbestos products — Johns-Manville — which speaks for the quality. You get lagging that's *machine curved* at the mill, saving hours of tough work for your roughnecks. Also, you entirely eliminate the danger of breaking your lagging, as so often happens in the case of a heavy, flat type of band.

In the face of all its advantages, the price is lower than you've been paying. Holler for a set, sure, on your next re-lining job!

The best known WORDin the Oil Business

T. T. WORD SUPPLY CO., Inc.

LAKE CHARLES — SHREVEPORT — HOUSTON — SEGUIN

P. O. BOX 276 HOUSTON, TEXAS

Tool Pushers NOTICE!

Almost every tool pusher has been a roughneck at one time or another. He knows the average drilling crew has enough mean, dirty, dangerous jobs in the regular run of things, without having unnecessary work shoved off on them. Consequently, he's glad to recommend and buy Johns-Manville *machine curved* brake lagging because it saves his roughneck friends hours of hard work on brake re-lining jobs. All the crew has to do is lay J-M lagging on the brake drum end, drill, and tighten up the lagging screws. No, straining pulling, hauling, cussing!

* * *

It's H...ll, when the boys have just about got a flat type lagging on the drum end, to have it crack straight across and break off! It happens every once in a while, and it's expensive.

But not with Johns-Manville machine-curved brake lagging. All the bending, and pre-curving, is done at the factory with machines. Saves the roughnecks, eliminates breaking and cracking of lagging. Every J-M lagging goes on whole.

* * *

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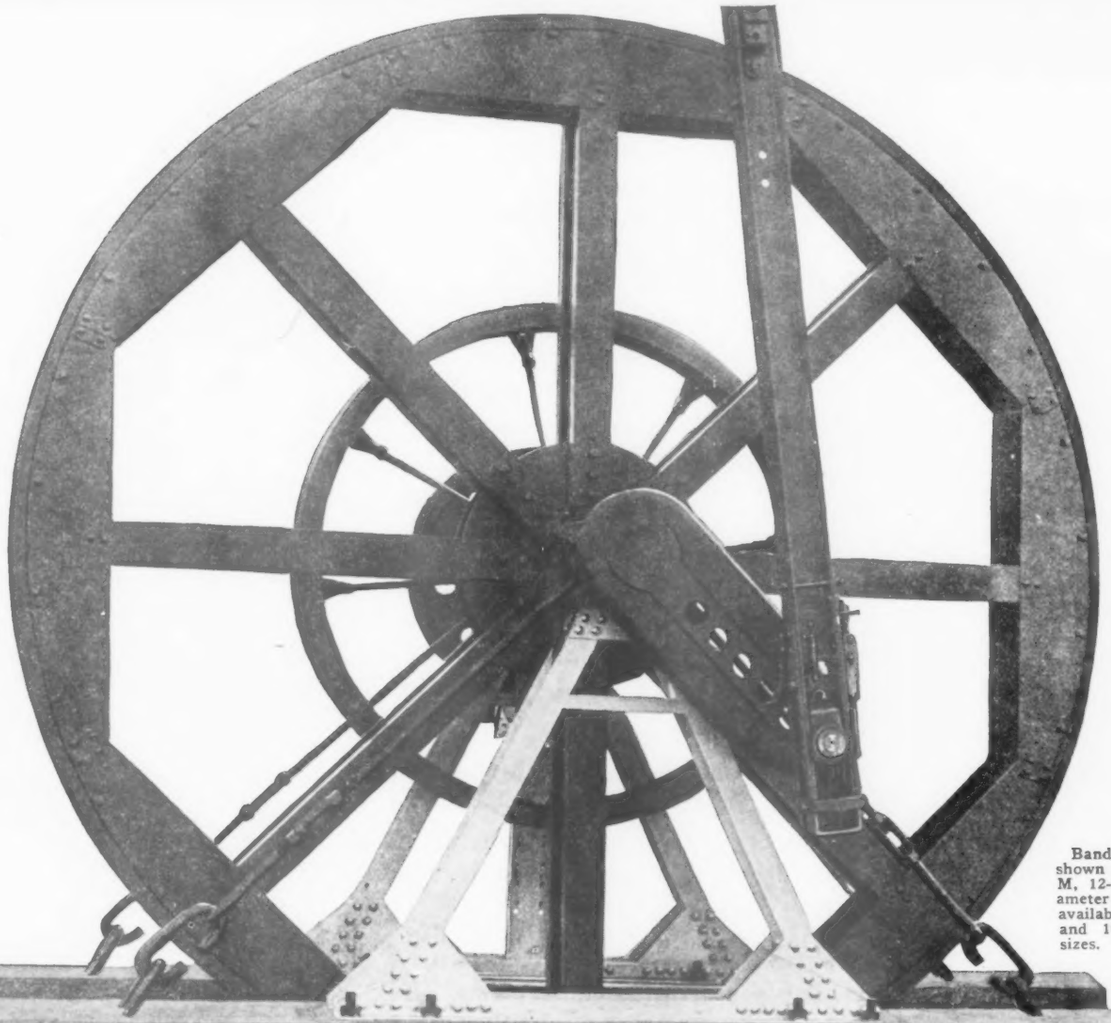

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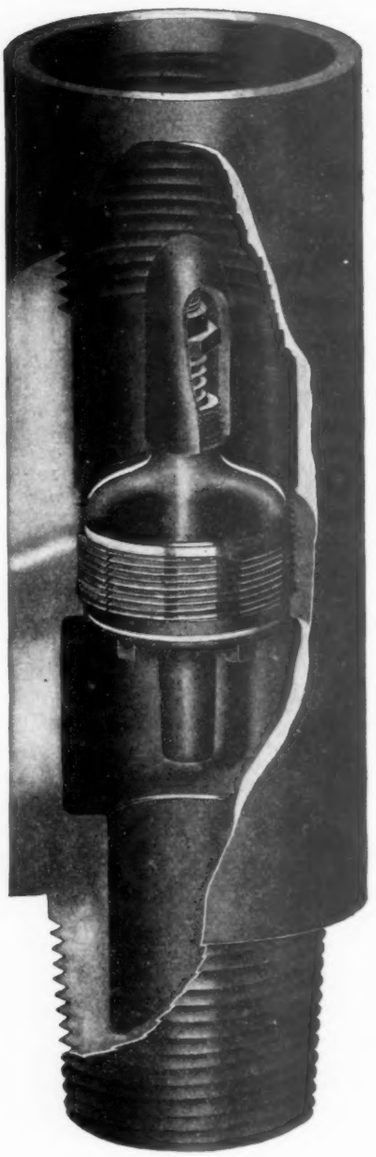

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SPENCER W. ROBINSON, EDITOR

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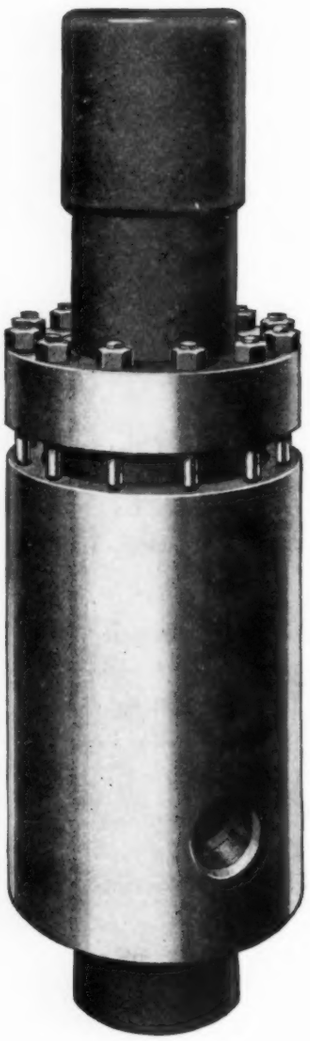
A Self-Contained Packing Head with a Double Anchor



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THE OIL WEEKLY

VOLUME 59, NO. 9 NOVEMBER 14, 1930

American Petroleum Institute's Analysis of Economic Report Finds

Need for Drastic Curtailment *Of* Refinery Output

By GRADY TRIPLETT

CHICAGO, Ill.—The statistical committees appointed by the American Petroleum Institute and the Federal Oil Conservation Board to act in a consulting capacity in the economic affairs of the oil industry, took out the heart of the industry, laid it on a table and the leaders of the industry watched it beat here Monday night.

And while experts on the inside workings of the oil industry gave advice freely the wound was still open and the operation remained uncompleted as Monday night's session adjourned.

But in the corridors, following the assembly, opinions held in restraint within the operating room, were generously offered to the effect that something would be done—not as a result of any pledged action on the part of the various company leaders, but as a result of a return to sanity—that will go a long way to bring the immediate affairs of the industry to an early return of a more healthy condition.

Reduced to the fewest simple words, the situation expounded at the meeting is this:

While there is too much oil production, the present almost disastrous situation has been brought about by the refining branch running too much crude to gasoline.

Production in Fair Shape

It was brought out that the production branch, though forced to do it under the stress of a bad economic situation, is now handling its affairs in a manner that is fairly satisfactory. And several speakers, among them Bob Penn, chairman of the central committee on proration in Texas; Burdette Blue, vice chairman of the Oklahoma proration committee, and others, made it rather plain that producers are getting tired of having their sacrifices come to naught because the refining branch, to quote Penn, "has had a period of insanity," while Burdette Blue lamented the fact that there is no "control commission on refining."

What this open meeting of the Institute had under consideration was reports from the Committee on Petroleum Economics to the Federal Oil Conservation Board and from the statistical sub-commitee to the special committee on the economic situation, as provided by the board of directors of the American Petroleum Institute at Tulsa, October 2.

Each report carried the implication that the petroleum industry must so scale its refinery output that it will come to April 1, 1931, with a gasoline inventory substantially below that indicated by present refinery operations.

Where the session lacked a goal was its legal barrier of no agreements. Those who had opinions could express them but the chairman, William M. Irish, could not call for a vote. The restraint on advice of counsel was evident.

The report of the Federal Oil Conservation Board's Committee on Petroleum Economics was analyzed by Joseph E. Pogue, its secretary. This committee based its calculations on the goal of coming to March 31, 1931, with gasoline inventories of 45,000,000 barrels. The summary of this report reads:

See Curtailed Gasoline Demand

"The demand for gasoline for the six months ending March 31, 1931, can not be closely estimated, but present evidence suggests that it will not exceed a year ago and may even be less. The committee believes that it would be desirable for the industry to adjust its operations to an unchanged gasoline demand as a maximum. The industry is now operating on a basis geared to a seven per cent increase in gasoline consumption. It is obvious, therefore, that a substantial reduction in operating rates is called for. A curtailment to balance a break-even demand for gasoline will require a reduction of seven per cent from the estimated October rate of gasoline supply, if inventories next spring are not to exceed the 45,000,000 barrels.

"If a reduction of seven per cent in the supply of gasoline is spread on an even percentage basis over the various sources of gasoline, then a crude run to stills of 2,310,000 barrels per day and a domestic crude oil production of 2,207,000 barrels per day are indicated. Should gasoline demand prove more adverse or refiners confine their gasoline curtailment to straight-run operations, additional restriction of refinery runs and crude oil production would be called for. If, on the other hand, demand should turn out to be more favorable, then the inventory situation may be permitted the benefit. A domestic crude oil production of 2,207,000 barrels per day,

corrected for estimated average to date, becomes 2,240,000 barrels per day and the latter figure may be allocated as follows (or other quotas in proportion):

California	535,000
Oklahoma	535,000
Texas	719,000
All other states	451,000

"The work of this committee and also that of the sub-committee on statistics came before the assembly in a summary from the special committee on the economic situation as its report to the board of directors of the Institute. This report is given in parts:

"Our statistical sub-committee concluded that an aggregate refinery stock of gasoline on April 1, 1931, of 40,000,000 barrels would be adequate, economically and conveniently, to supply all gasoline demand during the succeeding summer. This committee offers the same conclusion and wishes urgently to point out that a larger accumulation would be wasteful in every sense.

Crude Oil Demand

"The statistical analysis appended indicates that an 8.2 per cent reduction, starting October 1, in aggregate refining production by straight-run, cracking and natural gasoline blended, and imports, would give an aggregate stock condition April 1, 1931, of 40,000,000 barrels. This also indicates an average crude oil demand, during the period, of 2,392,000 barrels per day. This total demand includes crude run to stills, exports and crude directly used. It would be supplied both from domestic and imported crudes. The current demand for crude for all purposes is about 2,531,000 barrels per day."

John D. Gill, chairman, gave the details by which the statistical sub-committee had arrived at the figures, which are calculated to bring gasoline stocks to desirable figures by April 1, 1931. Based in terms of crude oil, 435,373,000 barrels will be required. Of this, 406,498,000 will be domestic crude, with 28,875,000 from foreign fields.

Against the figures offered as essential to coming into the summer season with reduced gasoline inventories, results of a recent survey by the American Petroleum Institute indicated that present refinery operations are scaled to find stocks at 52,000,000 barrels by April 1.

It was this mass of statistics which the open meeting, the first of that nature ever to be a part of an American Petroleum Institute program, had for the peculiar consideration which consisted of the privilege of individual approval or disapproval but without the chance for any collective action. It was something which could be talked about but upon which no motion could be made.

E. B. Reeser, president of the Institute, pictured the situation as one which each individual could understand and from that base his own decisions as to the future operation of his company's facilities.

Texas Has Learned Lesson

Robert R. Penn, chairman of the central committee, explained the situation with Texas producers as one where the producer asked only "that the refinery determine their needs and then let them be known."

"We have learned our lesson," he said. "The producers of Texas expect to keep their output within the requirements of refiners, who, for some reason, have not been able to so restrict operations that they can maintain profitable prices. All we ask is to know your needs and we'll strive to keep our output below that figure."

E. G. Seibert, president of Standard Oil Company (Indiana), said it would be the policy of that company to keep its activities within the scope of good business, which the reports of the committees seemed to interpret. Concerning imports he said the Pan-American was now bringing in gasoline for sale through its own outlets and to fill certain contracts.

"And," he continued, "if any American refiner wants any of those contracts to the tune of a million and a half or two million barrels, we'll reduce our imports by that much."

Not Enough Attention to Storage

K. R. Kingsbury, president of the Standard Oil Company of California, expressed the opinion that too little attention had been given to crude oil in storage. He thought that California producers would willingly conform to any program which promised stability.

Walter Miller, vice president of Continental Oil Company, gave a practical suggestion for holding gasoline stocks to the 40,000,000-barrel mark.

"Figures just offered," Mr. Miller explained, "show that we have 38,000,000 barrels of gasoline in storage now. All that is necessary to come to April 1 with 40,000,000 is for you executives to instruct your refinery managers not to add to storage over the period."

R. C. Holmes, president of The Texas Company, said he thought some attention should be given to reducing crude oil stocks, although he realized it could not be undertaken in the period prior to April 1.

The element in the producing ranks which is dissatisfied with results of curtailment, came in for consideration when Burdette Blue, vice chairman of the Oklahoma proration committee, spoke.

Dissatisfaction in Oklahoma

"On the whole," he said, "the attitude of Oklahoma producers is comparable to that reported by Mr. Penn from Texas. But some are wondering if they have not made sacrifices which have been thrown away by the refiners. These must be given some satisfaction if you are to keep them in line."

Economic pressure and low prices were credited with bringing about the curtailment thus far accomplished, by W. S. Farish, president of Humble Oil & Refining Company.

"The trouble is," he explained, "that we have no machinery of control, unless we have it in the recent decision of the Oklahoma Supreme Court, which held constitutional the statute under which the Corporation Commission of that state enforces its proration orders.

"But proration is no answer to our problem. It will stave off disaster, but we face permanent over-production. We have no right to ask the agencies of government to go with us in giving away our products.

"What we need is a machinery of control through which we can come into prosperity. It may require further legislation."

The question of imports was brought before the meeting by Wirt Franklin, president of the Independent Petroleum Association of America.

"Either you must restrict imports," he prophesied, "or you must bring the level of activities in domestic oil production down to the point where importations will be unprofitable. One of these must result, for you can not permanently shut in fields like Oklahoma City."

See Full Text of Economics Report on Page 25-e

Institute Speakers Point Way to Better Times

By SPENCER W. ROBINSON

At a meeting of the board of directors of the American Petroleum Institute, held Monday afternoon, November 10, a resolution was adopted approving the plan for holding mid-year meetings of the three divisions of the Institute.

The time and place of the meetings of the three divisions will be determined at business sessions of these divisions later this week.

This action was taken because of the growing congestion of divisional and committee activities at the annual meeting.

It is thought that the annual meeting of the Institute in the future will be confined to the consideration of the industry's major problems and the hearing of reports on divisional activities.

CHICAGO, November 11.—Ways of hurdling the financial and the legal barriers that obstruct the path of oil were offered to the American Petroleum Institute this afternoon, which marked the first general session of the eleventh annual meeting and the official opening of the meeting. The session consisted of the annual address of E. B. Reeser, the president; the election of directors to fill expired terms; addresses by Philip R. Clarke of the Central Trust Company of Illinois, and by Colonel William J. Donovan, former Assistant Attorney General of the United States. After dealing with depressed conditions in the petroleum industry, as well as in other industries, President Reeser laid stress on the contention that fundamentally the petroleum industry is sound, saying:

"Momentarily the demand for petroleum products is not keeping pace with production; but for the petroleum industry there is one underlying factor of safety, namely, that the foundation of our present-day industrial life rests upon petroleum in some form. Petroleum is the source of power and lubrication for the motor car, truck and bus; for the stationary internal combustion engine and the moving locomotive and tractor; for the ships which fly in the air and sail the seven seas. It is, therefore, certain that petroleum products will relatively be in ever increasing demand. The point of permanently saturated market is far removed.

"But let us in the industry not be lulled into any false sense of security by the broad vista of the future demand, nor be deceived by the golden blow of the high sun upon the canvas. No one need have fear for the fundamental soundness of the petroleum industry as such. It is a restoration of prosperity for men and units engaged in the industry we must presently seek. To find that, each of us must face facts as they are in order to determine things as they ought to be. We should and must, apply to the oil business the same sound principles of economics that we should apply to the fluctuations in the market for wheat, cotton, cattle, coal, silk, or any other of the world's staple necessities."

Must Observe Price Trends

In his speech on "Corporate Financial Stability," Philip R. Clarke singled out the necessity for observing the trend of prices of basic commodities in order to determine when the turn comes in business. Some of these he said evidently had turned upward, while others show a tendency to hold at present levels.

From statistics he revealed how prices of raw materials had been dropping since one year after the close of the World War, a condition similar to that which followed the

NEW A. P. I. DIRECTORS NAMED

Chicago.—Directors to fill vacancies created by expiring terms, nominated by the board of councilors and elected by the American Petroleum Institute, are as follows:

Production Group:

Pacific Coast Section—R. A. Broomfield, L. P. St. Clair* and Oscar Sutro.*

Central United States—W. S. Farish* and Axtel J. Byles.*

Manufacturing Group:

Pacific Coast Section—H. H. Gallagher.*

Central United States—Roy B. Jones.*

Eastern United States—Frank X. Fretter, F. R. Nutty and W. E. Smith.*

Distribution Group:

Pacific Coast Section—K. R. Kingsbury.*

Central United States—L. L. Marcell,* Henry M. Dawes and E. W. Sinclair.

Transportation Group:

Ships—J. Howard Pew.*

Pipe Lines—C. H. Kountz.*

Supply Group:

J. M. Crawford.

Foreign Trade Group:

Walter C. Teagle.*

At-Large Group:

C. B. Ames,* Jacob France, Wirt Franklin, S. A. Guiberson, W. F. Humphrey, D. J. Moran,* W. G. Skelly,* E. J. Bullock and R. W. Stewart.

Elected by the Board of Directors:

W. M. Keck, C. F. Myers, J. C. Van Eck* and George P. Whaley.*

*Re-elected.

EXCERPT of an address by E. B. Reeser, president of American Petroleum Institute:

"Critics may analyze the petroleum situation to their heart's content, and find what they may seek; but, as I see it, these three factors in the oil situation are important for oil company ownership and management to note and to remember:

"1. The petroleum industry at this moment faces a condition that it has faced only once before in its history, namely, the almost certain prospect that during the coming six months' period there will be a very small, if indeed any, percentage increase in the demand for its principal money product—gasoline.

"2. The excess of all liquid petroleum products at any given time is the difference between the aggregate of all stocks actually on hand and the aggregate working stocks necessary to meet current demand. The same difinition will apply to stocks of crude or of any particular refined product. It, therefore, follows that the economic lesson is to dispose of, or to reduce, the excess until a balance is reached.

"3. The necessity for quickening effort to find as promptly as possible the effective and permanent solution of the industry's major problem of how to prevent recurrent periods of overproduction of crude oil, which remains the root of the evil."

Civil War. That part of his speech dealing with these price trends and the capital structure of oil concerns follows:

"These trends, dealing as they do with trade in its most fundamental aspect, strongly suggest that the decline has finally spent itself and is possibly already on the up-grade —that business has passed the crisis in an operation that, while very painful, was imperative to its future health. It is still premature to talk much of convalescence—to direct attention to our tremendous reserves and our great wealth, but these basic conditions exist and cannot fail to stimulate recovery in the United States more quickly than in those other nations not so fortunate. Our credit system is unimpaired—our inventory of finished goods is low and the retrenchment in consumption has been so pronounced in these past few months that its resumption should be quickly noticeable even though its volume does not expand rapidly.

"As stated a few moments ago, there are countless collateral influences that enter into any study of the situation. Some will be contradictory and others confirmatory of an analysis that concentrates itself on commodity prices, but it seems reasonable to assume that any conclusions that predicate themselves on basic principles, are the most appealing to our common sense. And that is particularly true if the conclusions are as encouraging as those which I believe, may be drawn from the figures I have given you. To me there is much justification for deducing therefrom that business has reached the cross roads and that green lights are ahead. It is not so important however, as to whether there is agreement of reason for such a belief, if only those whose mental inertia has resulted in either discouragement or fear or hopeless resignation, could acquire a similar point of view. General Dawes epitomized it all when he said: 'The business fool of 1929 was he who had no fear. The business fool of today is he who has no hope.'

All Industries Suffer

"The petroleum industry has suffered with trade in general. It has also had its own peculiar problem of a production very much more difficult of control than almost any other raw material. For this reason it has been giving consideration to restricted output for a longer time than any of the other basic industries now so thoroughly aroused to the urgent need of production curtailment. It has been difficult to secure complete statistics with respect to the amount of capital that has been invested in the petroleum industry since its inception, but it is believed to be in the neighborhood of $11,000,000,000. If that is the case the return from such an investment has been averaging not much over three per cent, despite the excellent earnings of so many individual oil companies. These figures become the more reconcilable, however, if we bear in mind, as was recently stated, that losses to the oil industry in the last 20 years in only the producing branch are estimated at more than $4,000,000,000. Such statistics indicate the imperative need of controlling flush production so as to avoid waste, of creating genuine reserves in the ground and an orderly delivery to the market at stabilized prices.

"However, I would presume if I were to talk of the problems of the oil business to this audience, yet I cannot forbear from a testimonial to the progress which you have made, particularly in this past year, in not only collaborative production conservation but in more economical and efficient transporting and marketing practices.

"You should know that your efforts are being construed as another and very vital contribution to the world-wide necessity of adjusting the entire economic fabric to a balanced production and consumption. You should also know that capital cannot help but flow more freely into an industry that is insuring a stabilization of earning power to contrast with the violent fluctuations that have been a rather conspicuous factor in the petroleum earnings of the past. In that connection, your program committee particularly asked me to speak of those factors conducive to the strength of an oil company's financial structure in a period such as the present.

Keep Cash Reserves Large

"There is only one comment I can make—keep your cash reserves as large as possible. No one can definitely foresee how long it will take industry to attain again a position of large earning power. No one can accurately determine how much capital an oil company will require to keep itself readily responsive to such expansion as may be dictated by the developments of a somewhat probematical tomorrow—particularly when the discovery of fresh fields makes so many new demands in the nature of increased production and transportation facilities. One of the few benefits that accrued from the period of security inflation through which we passed in 1928 and 1929, was the ability of our large corporations to either reduce or extinguish their funded obligations by attracting new capital in the form of either preferred or common stock. This has been a very instrumental factor in enabling business to pass through the exigencies of the past 12 months with a strain on balance sheets as comparatively slight as the strain on earnings has been heavy. It is a particularly fortunate circumstance for those concerns which have been called upon to expend large sums of money to gear their facilities to readjusted conditions in the field of their operations. There may be even more demands before cash reserves can look to incrasing earnings for any material support. We all hope not, but as long as there is any doubt, the obviously prudent thing to do is to keep a rigid control over cash conservation."

Limiting Production Is Not Restraint of Trade

Donovan tells Institute anti-trust laws not designed to prevent reasonable agreements to protect industry

CHICAGO.—In his speech on "the anti-trust laws," Colonel William J. Donovan, former assistant Attorney General of the United States, gave a history of the Sherman Act as well as several decisions to show how it had been interpreted by the Supreme Court.

Then he dealt with the proposition that the petroleum industry might seek permission to limit production of oil, under the further interpretation of the law, as follows:

"The definite question is this: under existing law, can the competing companies in the industry enter into an agreement to curtail the drilling and production of oil for the purpose of meeting a crisis in over-production, conserving a wasting natural resource and protecting the investment that has been made? It was never intended by the Sherman law nor by the courts' interpretation of that law that American industry should be compelled to proceed with a policy of competition that results in self-destruction. As was said in effect by the Supreme Court in a case discussing the rule of reason, such a construction of the Sherman Act would prevent reasonable agreements among producers to put an end to abnormal and ruinous competition. It was not intended to destroy but to protect business; not to cause bankruptcy, but to prevent it; not to place the weak at the mercy of the strong, but to give equal opportunity for all to survive.

"The Sherman Act condemns only such agreements as unreasonably restrain trade. Certain types of agreements, however, are in and of themselves unreasonable without regard to surrounding circumstances. For example, an agreement to fix prices has been held to be illegal whether the prices fixed were reasonable or unreasonable. In other cases it has been held that an agreement by those dominating an industry imposing conditions upon an individual's right to engage in interstate commerce, or boycotting any person, is illegal, regardless of the reasonableness of the conditions imposed upon the individual or the justification for the boycott. Such agreements are immediately concerned with interstate commerce and are therefore, direct restraints of that commerce.

"Where an agreement is not itself concerned with commerce it cannot be said to violate the Sherman Act in and of itself. In such cases the question of legality depends upon whether the direct or intended effect is to restrain commerce. The intent is determined in view of all the circumstances surrounding the agreement. The Supreme Court has always recognized the distinction between production and commerce and has held that production is not commerce. Therefore, the production of petroleum within a state is not interstate commerce. This rule has been reaffirmed in subsequent cases. The case of United Leather Workers Union versus Herkert Meisel, involved a strike by the defendant labor union at the plant of the Herkert & Meisel Trunk Company. It was argued that since the products of the company were destined to be shipped in interstate commerce, that, therefore, the strike of the trade union was a direct obstruction of interstate commerce and in violation of the anti-trust laws. The Supreme Court rejected this view. In its opinion it reviewed many of the earlier cases and concluded this review by stating that; 'It is only when the intent or necessary effect upon such commerce in the article is to enable those preventing the manufacture to monopolize the supply, control its price or discriminate as between its would-be purchasers, that the unlawful interference with its manufacture can be said directly to burden interstate commerce."

"The court in that case referred to the case of United States versus E. C. Knight Company, which involved a virtual monopoly of the manufacture of sugar. There was no proof, however, of an intent to monopolize or restrain interstate commerce in sugar. The proof only showed acquisitions of stock in sugar manufacturing companies to control its making. While it has been said by the Supreme Court that this case is close to the line, it is interesting to note that the court did not find any necessary restraint upon interstate commerce in the control of supply, and refused to hold the transaction illegal in the absence of positive allegations and proof of the probable relation between the monopoly of manufacture, and the control of sales in interstate commerce.

"In other words, the effect of these decisions is that so far as production is concerned the legality of any agreement must be determined by its purpose and effect as disclosed by the surrounding facts and circumstances. However the legality of any such plan is conditioned upon the fact that the agreement is voluntary on the part of all concerned and that no coercion is exercised either to make people enter the agreement or to compel its observance. If this be true, then to determine whether such an agreement violates the law, the so-called rule of reason will be applied. In this respect the test of legality differs from the test applied to agreements to fix a price or boycott, which, as I have said, are in and of themselves illegal.

"No doubt the most crucial question is as to the effect of such an agreement upon prices. The consumer of your products must bear all the costs involved in the production, manufacture and marketing of the product. In periods of over-production followed by depression in price, the consumer enjoys a temporary cheapness, but in such a situation curtailment must come and industry must choose between curtailment resulting from bankruptcy and failure and orderly and intelligent limitation of production. The investments in the oil business are enormous, and if they are to continue, there must be, as in every industry, a reasonable return upon the capital invested. It would seem to be in the public interest to maintain a stable production which will result at all times in a reasonable return upon the capital invested in the industry and prevent,

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Symposium of Subjects Before A. P. I.

J. R. GIGNOUX, **Shell Oi Company of Caifornia,** in his paper, "Selection of Oil Well Casing Based on California Practice," presents the idea that the design of casing programs is of great importance to the operator since the cost of this commodity is between 23 and 35 per cent of the initial cost of the well. The selection of proper sizes will eliminate the setting of additional strings of casing and will cut down the operating costs. The results of a study of casing practices, conducted by the A.. P. I. California district drilling practice committee from data on over 200 wells are shown. This study advances a new clearance ratio method of proportioning sizes for casing programs.

Programs requiring underreaming are compared with those in which the practice is eliminated and it is clearly shown that although underreaming may reduce the cost of drilling a well, there are many undesirable features which are offset by this advantage. The safety factor practices in tensile stress of casing joints and collapsing stress are shown. However, there are many factors that make it inadvisable to take these results as the common basis for every well. In this case it is advisable to make the wall of the casing as thick as is reasonably economical. It is highly important that the conditioning of holes be thoroughly surveyed before running casing. Clearance ratios well established by use will not apply in cases where the drilling muds are not of good quality or the reaming or underreaming operations are not thoroughly carried out.

A uniform method of designing programs in the field will tend toward uniformity in sizes and weight for a particular field when the operators establish by use the most desirable size and weight for an almost unlimited number of formation conditions or friction depths occuring in the existent or future fields.

W. W. SCOTT, **Humble Oil and Refining Company,** Houston, has prepared in the paper, "Improvement in Production Practice," a summary of the outstanding developments and changes in the trend of producing oil. Technical and practical application of improved methods of producing oil has shown how the proper handling of wells and structures to take advantage of reservoir energy will enable the operating companies to produce oil and gas at an economical and efficient rate. One of the most interesting experiments in the repressuring project with very satisfactory results has been the test in the field near Olney, Texas. The purpose of this experiment has been to determine if the oil reservoir will be benefited by conserving the gas and returning all or a large fraction of the gas to the pay sand.

The Olney pool had almost reached its economic limit, since the average production was only two barrels per well per day. Gas pressure in the oil reservoir on the first of October lacked only a few pounds of reaching 400 pounds pressure, gas injection to be stopped when the average reservoir pressure is between 400 and 450 pounds per square inch. The pressure will be allowed to stand quiet for awhile in order that a study may be made of the equalization of pressure. Oil production at the most efficient rate will be started about the first of December.

Another experiment of the same type is being conducted in the field at Sugarland, Texas, in the Gulf Coast section. Repressuring was started in this field on April 2, 1930, the purpose of the experiment being to produce the oil in such a way as to allow the average pressure on the reservoir to fall off as slowly as possible with a given amount of production. This has been accomplished by keeping the average gas-oil ratios of the field as low as possible, by flowing the wells efficiently, and by closing in wells unfavorably located on the structure that could not be produced except with high gas-oil ratios. An average of about 85 per cent of the gas obtained from the field is pumped back into the reservoir, the injection pressure being maintained constantly at approximately 1400 pounds per square inch.

Methods and advantages of tubing flowing wells in the Yates field show a gas saving of 33 per cent by volume from information obtained on 55 wells. The control of flowing wells, maintenance of back pressure, and determination of allowable production have all served as a means of maintaining the gas-oil ratio and prolonging the life of the well. Efficient means of determining the potential production of wells without open flow tests have been found effective by maintaining equal pressures from the property line to the base of the various offset wells. This eliminates the danger of unequitable distribution of oil. The practice during the past few years of adapting gas-lift to wells of small size has become rather general and it has been found that under certain conditions the continuous flow in these wells can be replaced by intermittent flow and lifting cost which can be held at a low figure.

W. K. WHITEFORD, **Barnsdall Oil Company,** presents in "Water Supply and Treating Methods for Modern Oil Fields" the probable requirements of a field and the sources of supply. These sources are considered as rivers and streams, impounded surface waters, deep sand wells, shallow gravel wells and water mines. The transportation of water to fields necessarily means the investment of large sums of money for pipe lines and pump stations.

Benefits of water treatment include elimination of suspended matter, less trouble with boiler feed water pump packing, decrease in repairs, maximum efficiency afforded for operation and less boiler scale. These benefits in every case not only save money for the operators but also give added efficiency to the operating units with a maximum prolongation of life of the machinery.

Methods of treating the water call for the addition of lime to hard water to reduce temporary hardness and to also convert the sodium bicarbonate into sodium carbonate. Permanent hardness in the water can be removed by soda ash. Clarification and filtration of the water is necessary and calls for special equipment before the zeolite method of softening can be used. Costs and examples of installations and methods of treatments clearly show the advantage to operators of using these methods of insuring

Department of Production at Chicago

added life for their machinery, and greater operating efficiency. Treatment of the water after it enters the boilers is divided into two classes, the precipitate and the colloid. In the precipitate method it has been found most satisfactory to use soda ash and sodium aluminate. The colloidal type of treatment depends upon coating the particles of sludge as they form with a film of the organic material used the compound to render them non-adherent.

H. **E. DRALLE, Westinghouse Electric and Manufacturing Company,** presented "The Mechanics of oil Well Pumping" which is illustrated with records taken with telemeters, tachometers, ammeters, voltmeters, and timing devices. The few simple equations and the detailed oscilligraphic test data and results presented bring out the significance of the theoretical relations, and furnish a basis for for analytical calculations of stresses and power requirements of oil well pumping equipment.

A detailed analysis of the test data obtained and presented in this paper necessarily cause the following conclusions to be drawn:

1. Variable well reactions impose upon surface equipment heavy stresses that are magnified by prime movers with heavy inertias and reduced prime movers of small inertias.

2. A rotating type of counterbalance on the crank shaft gives maximum beneficial effect.

3. The variable torque of single cylinder gas engines superimposes high peak stresses on surface equipment.

4. Gas engine driven wells are most easily counterbalanced by the analytical method.

5. Torque variations on crank shaft with change in counterbalance are slight with band wheel drive, but the motor torque variations are definite.

6. In gear drives the best counterbalance indicates best behavior throughout the whole drive.

7. On electrically operated wells the best criterion of counterbalance is equal current peaks for the well and the counterbalance.

8. Motor wells are counterbalanced best by means of graphic ammeter, wattmeter, or tachometer.

9. Counterbalance, (on geared drive) giving minimum motor heating produces best operating condition on all surface equipment.

10. Extreme overloads on motors result in higher power bills.

11. Rod stress is an insensitive indication of counterbalance.

12. Difference in time on up and down stroke of the polished rod is not a criterion of correct counterbalancing.

T. **E. SWIGART, Shell Oil Company of California,** in his paper, "Engineering and Economic Aspects of Unit Operation of Oil Fields," presents the idea that unit operation is the result of companies cooperating in the development of a field instead of the smaller companies consolidating with larger and stronger companies because of competition between operators. Over-production of oil and narrower margins of profits have forced the operators to adopt this plan of development to eliminate over-production. Still another factor-physical waste is even now threatening to force such cooperative action within the industry.

The unusually heavy operating expenses incurred by each company in one field has caused further approval of this plan since all of the operations to be carried on in the field can be conducted by one central office system, thus eliminating the necessity for maintaining several separate offices. Production costs can be lowered by the proper planning of work and efficient use of all available machinery and materials.

"Unitization" has been defined by the committee of the Mid-Continent Oil and Gas Association as being "the term which refers to the practice of unifying the ownership and control of an actual or prospective oil or gas pool by the issuance or assignment of units or undivided interests in the entire area with provision for development and operation by an agent, trustee or committee representing all holders of undivided interests therein." The writer states that in his opinion the distinction between unit operation and any other types of co-operative operation lies in the principle of undivided interest in production and revenues and likewise the sharing of the total expense of developing and operating the unitized area.

J**OHN P. WEST, Prairie Oil & Gas Company,** Tulsa, in his "Land and Lease Aspects of Unitization," presents the opinion that unit operation is in line with sound economic thought and is an elaboration of the co-operation and conservation movements. Unitization, which is an extension of the partnership idea, has proven very successful and has shown that the idea has a very sound and practical nature. Encouragement of this idea and efficient application of the principle will do much to eventually substitute for proration, a method which has caused much adverse criticism on the part of operators.

Unit operation is grouped into three types which are dependent on the mechanics of contracts and accounting being standardized, certain controversial questions eliminated, and principles of equity defined. The types include first; a single individual or company acquires a block of leases and then parcels out fractional undivided interests in the entire area and in the well drilled; second, is the instance of a group of leases held in severalty ownership where, by mutual exchange of fractional assignments, each operator acquires an individual interest in each of the leases of the group in proportion to the size his lease bears to the total area of the group to be pooled; and third, is the unit plan which contemplates merging the severalty ownership of producing and semi-proven leases into a common ownership of individual interests of the area grouped.

The future possibilities of expansion of this plan are practically unlimited. Simplification to standard practices,

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Lessened Oil Demand Makes Curtailment Imperative

Economic Committee analysis sees need for reducing gasoline production seven per cent

WASHINGTON, D. C.—Secretary of the Interior Ray Lyman Wilbur, as chairman of the Federal Oil Conservation Board has made public the following report submitted to this board by the Volunteer Committee on Petroleum Economics.

It embraces a national survey of potential national petroleum requirements, etc., for the period October 1, 1930, to March 31, 1931, and was rendered by reason of unanimous request by the board of directors of the American Petroleum Institute. The report was completed in time for consideration by members of the American Petroleum Institute now assembled in Chicago in annual convention. Joseph E. Pogue of New York acted as chairman of this committee in the absence of J. Elmer Thomas, who is in Europe. In addition to Mr. Thomas and Mr. Pogue, the committee consists of Ray M. Collins, H. W. Lowrie, Jr. and H. Paul Grimm. The complete report follows:

Conditions in the Petroleum Industry

The petroleum industry entered the current business depression with excessive plant capacity, large inventories, and an enormous drilled up potential supply of crude oil. During the first six months of the depression, the demands for petroleum products were only moderately retarded and thus the curtailment schedules in effect in the industry were sufficient to keep supply and demand in approximately balance, although unfortunately no material progress was made toward the liquidation of inventories or in the reduction of drilling and capital expansion. In the late spring, however, the aggravated severity of the business depression led to a much more adverse decline in oil consumption, until in the summer the demand for gasoline and for all oil products had fallen approximately seven per cent below the levels considered normal for that period. This supplementary drop in consumption, together with the uncertainty of the duration of the lower figures, creates a new and perplexing problem for the petroleum industry to meet, and additional curtailment of both refinery operations and crude oil production.

In pointing to the need for further curtailment of current supplies, the committee feels that there may exist in the industry considerable misunderstanding as to the role of supply curtailment and the benefits to be derived from such action. It perhaps should be stated that curtailment of current supply is in the nature of an emergency measure and should not be expected to provide a cure for the fundamental economic maladjustments existing in the petroleum industry, which arise from the circumstance that this activity is overdeveloped, overcapitalized, and rests upon an unsound method of competitive offset drilling. Curtailment of production alone cannot remedy these conditions; to reach the root of the difficulty will require restriction of drilling, abridgement of plant expansion, and a modernization of the prevailing method of crude oil production to place this department of the business in low-cost brackets and on a competitive basis with the rest of the world. Curtailment of supply, however, is essential to sustain the industry pending more fundamental adjustments, but the difficulties involved in curtailment of supply should not be permitted to obscure the larger issue with which this report, by definition, is not directly concerned.

The committee desires to point out further that the Kettleman Hills and Belridge areas of California have enormous potentialities for the manufacture of low-cost gasoline and unless these areas are promptly brought under a plan of unit operation, much more drastic restrictions in refinery operations and crude oil production than are shown in this report will be required in all other districts. These areas, if competitively drilled, have the capacity for perpetuating overproduction for a considerable period.

Method of Approach

The problem of estimating the crude oil requirements of the country must be approached through an analysis of the prospective consumption of gasoline, the principal product of crude petroleum, and a translation of the gasoline demand into the domestic crude oil needed to provide the necessary gasoline. The problem is complicated by the impossibility of accurately gauging future demand at a time of acute economic unsettlement, as well as by the variations possible in the volume of components that go to make up the gasoline supply. To meet these difficulties a range of estimates is presented which will serve to show the great significance of relatively small differences in demand and the leverage effect of changes in the supply of cracked and imported gasoline; and from this range the most probable figures may be selected.

The past statistics used in this report and employed as a basis for the calculations are taken from the published reports of the Petroleum Division of the U. S. Bureau of Mines.

Demand for Gasoline

The consumption of gasoline in recent months has been sharply diverted downward from its normal course by the business depression. To forecast the demand for gasoline over the next six months in consequence requires a specific knowledge of the trend of business activity during that period. The basis for an accurate forecast of business over the near-term future is not available and therefore a dependable prediction of gasoline consumption cannot be given. In major depressions, however, so far as evidence is available, gasoline consumption is drastically affected and shows a lag of several months in following business activity, both on the downturn and on the upturn. During the third quarter of the year, gasoline consumption was running about seven per cent below a level calculated as normal, and with the business outlook still obscure the prospects for a favorable gasoline demand during the period under consideration are not promising. In the absence of a basis for precision, a range of demands from a decrease of four per cent to an increase of four per cent has been forecast and this spread seems likely to include the actual developments. See Table 1. Present evidence is suggestive that demand is apt to run toward the central or lower measures of this range.

To translate this demand range into supply quotas requires

SUMMARY OF THE REPORT

THE demand for gasoline for the six months ending March 31, 1931, can not be closely estimated, but present evidence suggests that it will not exceed a year ago and may even be less. The committee believes that it would be desirable for the industry to adjust its operations to an unchanged gasoline demand as a maximum. The industry is now operating on a basis geared to a seven per cent increase in gasoline consumption. It is obvious therefore that a substantial reduction in operating rates is called for. A curtailment to balance a break-even demand for gasoline will require a reduction of seven per cent from the estimated October rate of gasoline supply, if gasoline inventories next spring are not to exceed 45 million barrels.

If a reduction of seven per cent in the supply of gasoline is spread on an even percentage basis over the various sources of gasoline, then a crude-run-to-stills of 2,310,000 barrels per day and a domestic crude oil production of 2,270,000 barrels per day are indicated. Should gasoline demand prove more adverse or refiners confine their gasoline curtailment to straight-run operations, additional restriction of refinery runs and crude oil production would be called for and tables are presented to cover these contingencies. If, on the other hand, demand should turn out to be more favorable, then the inventory situation may be permitted the benefit. A domestic crude oil production of 2,270,000 barrels per day, corrected for estimated overage to date, becomes 2,240,000 barrels per day and the latter figure may be allocated as follows (or other quotas in proportion): California 535,000; Oklahoma, 535,000; Texas, 719,000; and all other states, 451,000. A method of inventory control of gasoline is presented which may be used as an operating guide without predetermination of the demand for gasoline. The import situation is analyzed and it is shown that while imports of crude petroleum have decreased, receipts of gasoline and fuel oil from abroad have increased; and that while 10 per cent of our total supply of oil is imported, 15 per cent is exported.

the selection of a gasoline inventory objective for the end of the period, March 31, 1931. The American Petroleum Institute has recently ascertained through questionnaires that an adequate gasoline working stock for September 30 is 29 million barrels, which when adjusted for natural gasoline is reduced to 27.2 million barrels. Seasonally corrected, the latter figure becomes 38.8 million barrels on March 31. While around 40 million barrels therefore appears a desirable inventory for next spring, the committee has used 45 million barrels, because of the shortness of the intervening liquidation period and the difficulty of attaining the lower figure. In Table 1, however, the calculations have been made on the basis in turn of 40, 45, and 50 million barrels so that the effect of varying inventory assumptions may be observed.

It may be read from Table 1 that a break-even demand, with an inventory objective of 45 million barrels for next spring, will require a curtailment of seven per cent in the gasoline supply from the estimated October rate. Should demand show a decline of four per cent, a curtailment of 10 per cent would be required. It is seen further that to gain an inventory position of 40 million barrels, instead of 45 million barrels, an additional curtailment of two per cent would be necessary.

Relation of Gasoline Demand to Domestic Crude Oil Requirement

To convert gasoline demand into a domestic crude oil requirement necessitates a consideration of the alternate sources from which gasoline is derived. The gasoline, or motor fuel supply, is made up of five components: Straight-run gasoline, obtained from crude oil by distillation; cracked gasoline manufactured from gas and fuel oil; natural gasoline extracted from natural gas; imported gasoline; and benzol. The composition of the gasoline supply in September, 1930, was as follows:

Components	Thou. Bbls. Daily	Per Cent
Straight-run	607	47.3
Cracked	476	37.1
Natural	142	11.1
Imports	51*	4.0
Benzol	7	0.5
Total	1283	100.0

* Largely cracked gasoline.

It is seen that less than half the supply of gasoline is derived *primarily* from crude oil; hence the variations in the other components of gasoline have a profound influence upon the demand for crude oil. Each barrel of gasoline from the other sources replaces *four* barrels of crude oil. This relationship is of far-reaching importance in the economics of petroleum.

In Table 2 is presented a series of gasoline demands translated into domestic crude oil requirements on the assumption that the other components of the gasoline supply are maintained at the estimated October rate with the entire required adjustment made in straight-run refining. A glance at this table reveals, on the basis shown, that the domestic crude oil requirement will range from 1,910,000 barrels per day to 2,270,000 barrels per day, according to the rate of change in gasoline demand. A break-even demand calls for 2,090,000 barrels daily of domestic crude oil. These figures suggest such a drastic curtailment in crude oil production that it seems desirable to consider whether the other components of gasoline can not be adjusted so that the burden of curtailment would fall less heavily upon the crude oil producer. Cracked gasoline is subject to restriction by the shut-down of cracking stills; this adjustment can be made with minimum dislocation to the crude oil situation, but such action is hindered by the competitve sale of anti-knock gasoline, whose quality would suffer if the supply of cracked gasoline were curtailed. Natural gasoline is a by-product and its supply is not readily subject to control. Imports of gasoline could be cut down by manufacturing less at the source. Benzol is negligible in volume and may be disregarded. Despite difficulties, all sources of gasoline supply can be reduced, if necessary.

Table 3 shows the effect of varying gasoline demands upon runs to stills and domestic crude oil required, under the assumption that the necessary curtailment of the gasoline supply is applied on the same percentage basis to all sources of gasoline. It may be observed, on this basis, that a break-even demand will exact a reduction (from the estimated October rate) of 4.5 per cent in refinery runs, and a like cutting down (from the October 18 rate) in the domestic output of crude oil. Further, each variation of one per cent in the demand factor requires a corresponding adjustment of one per cent in the degree of curtailment; that is, if gasoline demand drops an additional one per cent, an extra one per cent of curtailment will be required: and vice versa. In view of the relationships brought out in Tables 2 and 3, the committee feels that the present emergency calls for a reduction in all sources of gasoline supply, despite the inefficiency of maintaining idle crackers, although a restriction of cracking can be justified only on the basis of expediency.

Allocation of Domestic Crude Oil Requirement

Having calculated a range of domestic crude oil requirements, depending upon the demand for gasoline, the inventory

objective for next spring, and the type of curtailment adopted by refiners, we now approach the problem of allocating the requirements to the principal oil producing areas. After consideration of the various aspects of this matter, the committee suggests an allocation based with slight modification upon recent proration schedules in the principal producing areas, on the assumption that such programs represent a practical adjustment in the direction of developing tendencies. This allocation, under varying gasoline demands, is presented in Table 4. It is seen from this table that a break-even demand, for example, calls for the following domestic production, with the figures varying about one per cent with each change of one per cent in the rate of demand:

	Thousand Barrels Daily
California	542
Oklahoma	542
Texas	730
Others	456
Total U. S.	2,270

The figures shown above and in Table 4 have not been adjusted for overage between October 1 and such time as additional curtailment may be effected. For each month that elapses from October 1, an additional curtailment of approximately one per cent will be required to compensate for the overage factor. It may be pointed out, further, that because of their exteremely high gasoline content, the Kettleman Hills and Belridge areas of California, if actively produced, will call for additional downward adjustments in the allocation figures.

Bearing of Curtailment Upon Fuel Oil

The foregoing analysis indicates that no increase in gasoline demand, under the assumptions previously outlined, calls for domestic runs to stills of 2,310,000 barrels per day and domestic crude oil production of 2,270,000 barrels per day. The question arises whether such a schedule will provide sufficient other products. Upon analysis, no deficiencies arise except possibly in the case of fuel oil east of California, and this contingency depends in part upon the extent to which fuel oil demand is adversely affected. Present evidence suggests that refinery runs of 2,310,000 barrels per day, or less, will lead to heavy drafts on fuel oil stocks east of California, but a deficiency, if it arises, can be made up in several or all of the following ways: By increasing the canal movement from California where stocks are excessive; by reducing cracking further; by running a larger proportion of heavy crudes; by increasing the imports of Venezuelan and Mexican crude and fuel oil; and by decreasing the imports of foreign gasoline.

The committee feels that a sound gasoline schedule should not be permitted to be upset by fuel oil committments, as a local deficiency of fuel oil would be readily self-corrective.

Check On Supply Through Inventory Control

It is possible to set up a control of supply without estimating in advance the demand for gasoline. This may be done through predetermining monthly inventories that would conform to desired operating schedules and then adjusting supply from time to time in order to hold inventories to the prescribed levels. Table 5 is presented as a suggested course of gasoline and crude oil inventories which would lead to gasoline stocks of 45 million barrels on March 31, 1931, and no change in crude oil stocks. While the committee favors liquidation of crude oil inventories, which are regarded as far too large, it seems doubtful if liquidation can be accomplished this winter at a time when the seasonal and cyclical factors are both adverse. For the future, however, the committee favors a reduction of crude oil stocks at the rate of 100,000 barrels daily for an indefinite period; at this rate seven years would be required to cut domestic crude stocks in half.

Analysis of the Import Situation

Imports of all oils into the United States are approximately 300,000 barrels per day. This quantity represents about 10

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TABLE 1.—REFINERY CURTAILMENT NECESSARY TO MEET VARYING DEMANDS FOR GASOLINE DURING THE SIX MONTHS ENDING MARCH 31, 1931

Gasoline demand 6 months ending Mar. 31, 1930	Assumed change in demand	Indicated demand 6 months ending Mar. 31, 1931	Supply at estimated Oct. rate	Change in stocks[1]	Curtailment of gasoline supply from estimated Oct. rate to result in stocks on Mar. 31, 1931 of		
					40 Mill. Bbls.	45 Mill. Bbls.	50 Mill. Bbls.
Mill Bbls.	Per Cent	Mill. Bbls.	Mill. Bbls.	Mill. Bbls.			
208	—4%	200	230	+30	—12%	—10%	—8%
208	—2%	204	230	+26	—10%	— 8%	—6%
208	0	208	230	+22	— 9%	— 7%	—5%
208	+2%	212	230	—18	— 7%	— 5%	—3%
208	+4%	216	230	+14	— 5%	— 3%	—1%

[1]Stocks September 30 were 38.3 million barrels.

TABLE 2.—EFFECTIVE UPON DOMESTIC CRUDE OIL CONSUMPTION OF VARYING RATES OF GASOLINE DEMAND, ASSUMING GASOLINE STOCKS OF 45 MILLION BARRELS ON MARCH 31, 1931, AND ALL CURTAILMENT OF GASOLINE SUPPLY (FROM THE ESTIMATED OCTOBER RATE) CONFINED TO STRAIGHT-RUN REFINING

Period covered: six months ending March 31, 1931

Per cent change in gasoline demand from previous year	Required runs of crude oil to stills 1000 bbls. daily	Indicated curtailment from estimated Oct. rate	Domestic crude oil required 1000 bbls. daily	Indicated curtailment from Oct. 18th rate
—4%	1950	—20%	1910	—20%
—2%	2040	—16%	2000	—16%
0	2130	—12%	2090	—12%
+2%	2220	— 8%	2180	— 8%
+4%	2310	— 4%	2270	— 4%

TABLE 3.—EFFECT UPON DOMESTIC CRUDE OIL CONSUMPTION OF VARYING RATES OF GASOLINE DEMAND, ASSUMING GASOLINE STOCKS OF 45 MILLION BARRELS ON MARCH 31, 1931, AND CURTAILMENT OF GASOLINE SUPPLY (FROM THE ESTIMATED OCTOBER RATE) APPLIED ON THE SAME PERCENTAGE BASIS TO ALL SOURCES OF GASOLINE

Period covered: six months ending March 31, 1931

Per cent change in gasoline demand from previous year	Required runs of crude oil to stills, 1000 bbls. daily	Indicated curtailment from estimated Oct. rate	Domestic crude oil required 1000 bbls. daily	Indicated curtailment from Oct. 18th rate
—4%	2220	—8.5%	2180	—8.5%
—2%	2270	—6.5%	2230	—6.5%
0	2310	—4.5%	2270	—4.5%
+2%	2360	—2.5%	2320	—2.5%
+4%	2410	—0.5%	2370	—0.5%

TABLE 4.—EFFECT UPON ALLOCATION OF CRUDE OIL CONSUMPTION OF VARYING RATES OF GASOLINE DEMAND, ASSUMING GASOLINE STOCKS OF 45 MILLION BARRELS ON MARCH 31, 1931, AND CURTAILMENT OF GASOLINE SUPPLY (FROM THE ESTIMATED OCTOBER RATE) APPLIED ON THE SAME PERCENTAGE BASIS TO ALL SOURCES OF GASOLINE

Period covered: six months ending March 31, 1931
(In thousands of barrels per day)

Areas	Suggested percentage allocation	Suggested allocation basis following changes in gasoline demand				
		—4%	—2%	0	+2%	+4%
California	23.9%	521	533	542	555	567
Oklahoma	23.9%	521	533	542	555	567
Texas	32.1%	700	716	730	745	761
Others	20.1%	438	448	456	465	475
Total, U. S.	100.2%	2180	2230	2270	2320	2370

Shell Prepared to Reduce Venezuelan Exports

CHICAGO.—The Royal Dutch Shell Group, in a statement circulated at the annual meeting of the American Petroleum Institute this week, reiterates an offer which the company claims to have made more than a year ago that it is prepared to reduce its rate of production from fields in Venezuela, compared with the rate of production in 1929, proportionately with any average reduction in the United States on the same basis, the decrease being dependent upon similar reductions by other producers of Venezuelean oil.

The statement signed by F. Gobber,* director, Royal Dutch Shell Group is as follows:

"Considerable misunderstanding seems to have arisen in regard to the imports by the Shell Union of petroleum products from Venezuela. Certain interested parties who have apparently not taken the trouble to analyze the figures in order to secure for themselves the true position, are claiming that imports from Venezuela are largely responsible for the present very low prices on the domestic market. We cannot speak for other importing companies, but we do know that these imports, so far as Shell Union is concerned, have no bearing upon the domestic market.

The facts are that Shell Union has a distributing organization on the East Coast of the United States, which it has built up to provide an outlet for its production in California and the Gulf Coast. This contemplated, in line with the policy of other American companies, the shipment by sea of supplies to the East Coast so that, in addition to the gasoline marketed on the Pacific Coast and the Mid-Western and Gulf markets, its entire sales organization throughout the United States would be supplied with gasoline produced from crude obtained and refined in its entirety within the United States. Certain freight disadvantages to this plan, however, induced us to ship our California and Gulf supplies to Europe and elsewhere instead of to the East Coast, and to import in substitution, approximately equivalent quantities from Venezuela to the East Coast, so that, in effect, an exchange, gallon for gallon, of Venezuelan for American oil took place and the domestic market remained unaffected.

This is quite clear because, if, as has been suggested, our imports of Venezuelan gasoline were to be diverted to Europe and our California and Gulf supplies shipped to the East Coast, the net quantities marketed by us in this country would remain the same. It seems, however, that, although the facts are well known to most interested parties, a persistent campaign has been launched to mislead the public so far as our group is concerned. For many years past, the group with which Shell Union is associated, has consistently advocated conservation and has continually drawn attention to the inevitable consequences of the reckless and irrational development of the industry. Royal Dutch Shell has not only reduced its own production in the United States considerably below the decline for the country as a whole—the figures for California showing a decline of 32.1 per cent as compared with a decline of 21.7 per cent for the state as a whole, and for the Mid-Continent, Texas and Gulf Coast, a decline of 17.4 per cent as compared with a decline of 7.4 per cent for these states as a whole—but in addition Royal Dutch Shell has shut in very substantial quantities in Venezuela, Roumania, Dutch Indies and Mexico, amounting in all to not less than 18,000,000 barrels per annum, and if their proposals to conserve production in Venezuela had been proceeded with, they would have shut in a further quantity of 16,100,000 barrels per annum. It is quite obvious, therefore, that this group has already made sacrifices considerably in excess of most other companies in an endeavor to create more normal conditions within the industry as a whole.

It still believes that substantial benefits to the public and to the industry can be realized within the near future if those interested in the industry will approach their problems from a broader angle, and whilst it is quite clear that so far as this group is concerned, a re-arrangement or a reduction of imports can not affect the domestic market, it is willing, in order to still further prove its desire to co-operate and to remove the prejudices which undoubtedly have been created, and subject to its being able to make satisfactory freight arrangements, to substantially reduce its imports of Venezuelan gasoline by approximately half the requirements of its East Coast organization, so that to this extent the quantities of California and Gulf Coast gasoline, which hitherto have been shipped to points outside of the United States, will, during 1931, be shipped to the East Coast; whilst to the same extent Venezuelan gasoline, which has been imported to the East Coast organization, will be shipped direct to other points to take the place of the California and Gulf Coast products.

Royal Dutch Shell continues in the strong belief that the crux of the whole situation is, that oil should be produced only within the limits of the demand, and that not only should crude oil come within this definition, but that refined products also be similarly included. For its part, it recognizes the efforts which have already been made in the United States and other countries, to which reference has already been made, and so far as the production in Venezuela is concerned, it reiterates its offer made almost 12 months ago that, provided other producers in Venezuela will accept the same undertaking, it is prepared to reduce its rate of production from fields in Venezuela compared with the rate of production in 1929 proportionately with any average reduction in the United States on the same basis. This offer has never been withdrawn, and it is clearly evident that the efforts of producers within the United States will be largely nullified unless production in Venezuela is similarly and proportionately reduced.

"It is interesting to note that, if this offer had been accepted in January of this year, when it was made by Royal Dutch Shell, the production from Venezuela would already have been reduced by many millions of barrels for the year and the whole oil position would, in consequence, have been considerably improved."

*See "Price Cutting Preventing Justified Market Improvement," by H. J. Struth, The Oil Weekly, September 5, 1930—page 37, and letter from S. W. Duhig, Shell Union Oil Corporation, New York, and editor's reply, The Oil Weekly, October 3, 1930, page 242.—Editor.

Improvement *In* Production Practice

By W. W. SCOTT
Humble Oil & Refining Company, Houston, Texas

THIS paper has been prepared for the purpose of presenting a brief summary of some of the outstanding developments and changes in the trend of producing oil. The general attitude of the men in the oil industry toward the utilization of natural gas in the production of oil accounts for many important changes in the production business. Practical and technical men, as well as executives, have become well informed on the proper handling of wells and structures to take advantage of reservoir energy in order to produce oil and gas at an economical and efficient rate.

PERHAPS one of the most interesting advances is the project of the Humble Oil & Refining Company in the field near Olney in Young County, Texas, where a small pool has been set aside for the purpose of experimenting with repressuring with natural gas and the maintenance of pressure while being produced. The purpose is to determine if the oil reservoir will be benefited by conserving the gas and returning all or a large fraction of it to the pay sand. This field has a productive area of about 80 acres; is about 1000 feet in depth, and has an average sand thickness of about 19 feet. The pool had almost reached its economic limit, since the production average was about two barrels per day per well before the gas injection was started. Gas injection was started in January, 1930, and by October 1 almost 100,000,000 cubic feet of gas had been injected into the pay sand, and the oil reservoir pressure lacked only a few pounds of reaching 400. It is planned to stop the gas injection when the average reservoir pressure is between 400 and 450 pounds per square inch, and then let the reservoir stand quiet for a while to study the equalization of pressure. About December 1 oil production will be started, and oil produced at the most efficient rate. Gas produced with the oil will be collected, compressed, and returned to the reservoir. The primary objects of this project are:

1. To measure the amount of additional oil that can be expected where the gas is returned to the pay zone during the early life of the field.

2. To measure the effect of the retarding of the pressure decline on extending the flowing life of a field.

Besides the above objects, the experiment will provide an opportunity to obtain data on:

1. Gas migration through the sand; pressure gradiant when the gas is moving through sand; pressure gradiant when there is no movement, and the rate at which gas goes into solution in the oil in the sand reservoir.

2. Variation of bottom hole pressure with rate of the production and the effect of the production rate of the pressure differential between the reservoir and the well.

3. The flow of oil and gas mixtures in vertical pipes which may aid in the design of flow tubing.

4. Drainage of the wells and extent of interference.

The Sugarland oil field located in the Texas Gulf Coast area about 25 miles southwest of Houston holds a unique position in present-day oil fields. This field is an example of the important role played by natural gas in the production of oil. In this field it has been possible to produce the oil in such a way as to allow the average pressure on the reservoir to fall off as slowly as possible with a given amount of production. This has been accomplished by keeping the average gas-oil ratios of the field as low as possible, by flowing the wells efficiently, and by closing in wells unfavorably located on the structure that could not be produced except with high gas-oil ratios. All of the gas produced with the oil is collected, and about 85 per cent or more has been compressed and returned to the reservoir. The injection pressure is approximately 1400 pounds.

The first well in the field began producing in March, 1928. The development was slow for the first year, and during that time only eight wells were completed. During the year 1929 drilling was accelerated, and by March 1, 1930, 57 wells had been drilled and completed as producers. The return of gas to the reservoir was started April 2, 1930. By this time the field had produced approximately 5,000,000 barrels of oil and 2,300,000,000 cubic feet of gas. The average gas-oil ratio during this period was, therefore, about 460 cubic feet per barrel of oil. By the proper selection of wells the high gas-oil ratio of the field was greatly reduced, and by July, 1929, it was 400; in November, 1929, it was 375, and in March, 1930, it was 265 cubic feet per barrel. Since the amount of gas dissolved in the oil at reservoir temperature and pressure is 211 cubic feet, a ratio as low as 265 is evidence of extremely efficient use of gas energy in moving oil to the well and to the surface.

The original rock pressure was between 1450 and 1500 pounds, and up to the present time the formation pressure has declined not in excess of 200 pounds. The benefits from the return of gas to the sand are:

1. With the low net gas-oil ratio possible with the return of gas to the pay zone, the reservoir pressure declines slowly; and after given oil withdrawals, the reservoir pressure will be much higher than it would be without gas return. Therefore, it can be assumed that by slow pressure decline, the actual ultimate production will be increased materially.

2. With the slower reservoir pressure decline, the bottom hole pressure will at all times be greater and the flowing life of the field extended probably throughout the en-

A brief summary of some of the outstanding developments in the production of oil, presented at the Chicago meeting of the American Petroleum Institute under the auspices of the Division of Production

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tire production life. The pumping cost of a large volume of oil will be saved.

Lifting Costs Reduced

In any oil pool that depends upon a gas movement for production, and one in which it is possible for a single operator or a group of operators to develop the pool as a unit, the cost of conserving gas and returning it to the reservoir will be amply repaid by reduction of lifting cost and increased production from the pool.

Early in the development of the Sugarland field in Texas, the importance of conserving gas energy was recognized, and the wells were equipped and produced accordingly. As the wells of excessive high gas-oil ratios were closed in entirely, it is difficult to arrive at any definite figure for the gas kept in the formation by this procedure; but the wisdom of such procedure is unquestionable. By conservation of gas in this field there must have been at least as much gas left in the formation as has been produced up to the present time. This gas, therefore, is still available as energy to move oil to the hole and to the surface; whereas, under other methods of production, the gas would have been wastefully produced and lost.

The subject of tubing wells for gas conservation has been one for discussion regarding the merits of the program. This subject is discussed briefly later on in this paper; but it is interesting to note that in the Yates oil field information from 55 representative wells, which were tubed after being completed and produced through casing, had a gas saving of 33 per cent by volume. On the other hand, in the Sugarland oil field, where the field is produced at a very low gas-oil ratio, at least 10 per cent in volume of gas has been saved by the use of tubing as a flow string.

The industry during the past few years has also generally recognized the benefits to be derived from the control of flowing wells. Since gas supplies the energy by which oil is brought to the well and surface, its conservation and efficient use are highly important if the maximum recovery is to be obtained from a given reservoir.

It is generally accepted that the basis of measuring efficiency of production of oil is by its gas-oil ratio. The gas-oil ratio of the wells can be controlled by means of back pressure, size, and depth of tubing. In most fields the control of gas-oil ratio is accomplished at the surface by means of back pressure and in others by means of choking or holding back pressure on a gas and oil separator. Specific information on this subject is given in this report.

The determination of the allowable production to be produced from a given well in a field which is prorated has been one of the major problems before the producers. It is, therefore, the duty of the production engineer to give the industry a definite, accurate, and positive method of determining the allowable production to be taken from a well without making an open flow test.

In the past each operator has been allowed a certain production which is proportional to the potential production of wells on his holdings. The potential production of wells has been determined by an open flow test, which consists in measuring the production of a given well under open flow for a period of time which is frequently as short as one hour. An open flow test of this kind has disadvantages. In some cases there is a possibility of damaging the mechanical condition of the well and accelerating water encroachment. Most important of all, the open flow test does not give an accurate gage of a well, since the open flow production of a well for a short period is dependent upon the skill of the workmen to manipulate the open flow test after the well has been standing for a considerable length of time. It is possible to obtain a production for a few hours' period which does not represent the productive capacity of the well over a long period of time.

The procedure proposed is discussed in detail later on in this paper. The method proposed is briefly summarized as follows:

The capacity of a given well is dependent to a great extent on the energy losses in the producing sand. These energy losses can be evaluated by determining the relationship between the bottom hole pressure and production. The small well will show large drops in bottom hole pressure as the production rate increases, while the larger wells may produce at high rates of flow with very little change in bottom hole pressure. Inasmuch as this relationship exists, and since the capacity of a well is largely dependent upon it, an equitable system of proration could be developed which would make use of the decline of bottom hole pressure with production rate as a gage of a well's capacity.

In order to prevent undue drainage of oil on one property through wells on another property, the pressure drops from the property line to the base of the various offset wells should be nearly the same in all cases. If this is done, the danger of an unequitable distribution of oil would be minimized. Although the labor involved in obtaining the data for such a method is probably greater than that required to make the open flow test, it is believed that such a system will give a more just distribution of the oil, and will involve less danger to the wells themselves, than will the system in which the open flow test is used.

During the past few years it has become general practice in certain areas to adapt gas-lift to wells of small size. The use of continuous gas-lift reaches an economic limit in small wells beyond which it is not advantageous to go, by reason of excessive consumption of gas and oil produced. This economic limit is reached early in the life of wells, as the depth increases. It has been found that under certain conditions the continuous flow can be replaced by intermittent flow and lifting cost can be held at a low figure.

IMPROVEMENT IN PRODUCTION PRACTICE

The use of intermittent flow, as well as any other production method, must be applied where conditions are favorable.

Acknowledgments

The writer wishes to acknowledge the assistance of the production practice committees in the various districts. Considerable information was submitted, but due to the lack of time it could not be worked up in order to be included in this report.

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A Repressuring Experiment Project to Measure the Effect of Early Gas Injection

By H. D. WILDE, JR.
Humble Oil & Refining Company, Houston, Texas

THEORETICAL considerations will show that if an oil pool depends essentially on gas energy to move the oil to the well, the pool will be benefited by conserving the gas and returning all or a large fraction of it to the reservoir. However, so far it has been impossible to estimate how great an increase in the ultimate recovery will result or how long the flowing life can be extended by this procedure. Even if this procedure is used in an actual field, it is possible to evaluate the benefits derived, as there is no way of knowing what the field would do if it were produced in the usual manner unless special and extensive experimental work on the field is conducted. Any suggestions for extensive experiments designed to yield information on this question on an important producing field would be opposed because of probable interference with regular operating schedules and commitments, because of the great expense involved in such large scale experimental work, and because of the possibility of injuring the field.

The ideal way to get the information would be to find two unproduced fields, small enough to be unimportant sources of oil, both wholly controlled by the same company, and both near enough alike in their characteristics to make the results comparable. One field would be produced in the usual manner, while the other would be produced under such conditions that the gas produced with the oil could be returned to the reservoir. The chances that the company desiring to do the experimental work would be able to find such an ideal set-up at the time it was ready to carry on the work are almost negligible.

Failing this, the next best way would be to take a small pool where water encroachment is absent and one that is entirely under the control of the company. The pool would be produced in the usual manner until the reservoir pressure fell to atmospheric and the production rate had reached the economic limit. Then all producing wells would be shut in, and the pressure on the reservoir built back up to the original value by injecting gas. If this were done, the original reservoir conditions would be reproduced, with the exception that the per cent saturation of the sand with oil would be less and not all the oil in the sand would be saturated with gas. The repressured pool would then be produced under such conditions that all gas accompanying the oil would be conserved and returned to the reservoir. All oil so produced would be additional oil that would be obtained from the pool had gas return been practiced from the start. The additional oil obtained could be compared in volume with that obtained under normal operation, and the increase could be expressed in per cent. This would also show how effective gas return would be in extending the flowing life of the field, and whether flowing is solely a function of the reservoir pressure or whether it also depends upon the extent of depletion of the reservoir.

Description of Experimental Pool

Humble Oil & Refining Company was anxious to carry on a repressuring experiment of this nature, and looked around for a suitable pool. A small pool in North Texas, a few miles north of Olney in Young County, seemed well suited for this work. It is located beneath two leases, has a productive area of about 80 acres, is about 1000 feet below the surface, and has an average sand thickness of 19 feet. The structure is slightly arched, and there is practically no edge or bottom water, as the reservoir is completely sealed off above, below, and around the edges with impervious strata. Evidence indicates that there is good communication from one part of the pool to another. There are 21 producing wells spaced 300 feet apart. These wells did flow for a few weeks, but produced most of their oil on the pump. The pool had almost reached its economic limit as the production, just before repressuring was started, averaged only two or three barrels per day per well.

FIGURE 1
Hook-up showing well connections for gas injector and provisions made for recording pressures

The reservoir pressure had been reduced to below atmospheric, as the casingheads of the wells had been tied in to a natural gasoline plant.

One of the two leases overlying the pool was held by Humble Oil & Refining Company; the other was acquired in order that the pool could be treated as a unit in this experimental work. Gas needed for pressure restoration was available at 150 pounds from a commercial gas line passing over one of the leases.

When the experimental work was started, all wells were shut in and cleaned. All wells are now equipped with two-inch tubing suspended in the hole to within a few feet of the bottom, but are not supplied with pumps. The gas distributing system is arranged so that gas can be injected into to tubing or the casinghead of any of the 21 wells. A recording pressure gage is attached to the tubing head of each. Gas can be bled into the tubing at slow rates through a one-quarter-inch line and needle valve to keep fluid from entering the tubing, and in this manner the recording gages give a continuous record of the bottom hole

pressures of all wells. All wells have orifice meter plates in the gas lines to them, so that the amount of gas injected in each well can be measured. Figure 1 is a photograph of the well hook-up. The orifice flange and meter in the right foreground are on the gas injection line. To the right of the well are shown the stopcocks for admitting gas to the casing or the tubing and the one-quarter-inch valve for bleeding in gas for pressure measurements. The stopcocks on the left of the well are to be connected to the lead lines to the gas separators, but will not be connected until the well is put on production.

Each lease is equipped with two sets of gas separators, meters, and stock tanks; and the producing wells will be so manifolded that the production from any one well can be handled in one set, while the production from the rest will be handled by the other. In this way the daily production of oil and gas from individual wells can be successively measured. A three-stage compression plant is so arranged that it can take gas from the separators or gas purchased from the commercial gas line and compress it to pressures needed for injection into the reservoir. The discharge pressure may be as high as 800 pounds if necessary.

The original rock pressure, and consequently the value to which the pressure must be built to restore original conditions, is not known exactly, but it is believed to be between 350 and 450 pounds. Gas injection was started in January of this year, and by October 1 almost 100 million cubic feet of gas had been injected, and the average reservoir pressure lacked only a few pounds of reaching 400. Ten of the wells, on alternate locations, had been set aside for use as injection wells as needed. The remaining 11 will be used as production wells.

It is planned to stop the gas injection when the average reservoir pressure is between 400 and 450 pounds, and then let the reservoir stand quite for a while to study the equalization of pressure. About December 1 oil production will be started. Wells will be able to flow with ratios as low as 300 cubic feet per barrel, if the bottom hole pressure is 150 pounds or more. On account of proration restrictions, it will not be possible to produce the field at its full capacity; and, hence, chokes will have to be used. However, flowing at full capacity would be undesirable, so this is not an objectionable restriction. The choke size on each well will be varied to study the flowing characteristics of the well. Thereafter, the wells will, as far as possible, be produced at the most efficient rates. The gas produced with the oil will be collected, compressed, and returned to the reservoir. Because the oil in the reservoir will not be completely saturated, the return of this gas will not retard the decline of pressure as much as gas return in a new pool and, consequently, enough outside gas will be injected into the reservoir to make the pressure decline equal to that in a new pool.

Information Expected

As mentioned above, the primary objects of this experimental work are to measure the amount of additional oil that can be expected from gas return started when the field is still young, and to measure the effect of the retardation of pressure decline on extending the flowing life of the field.

In addition to these, the experiment provides an excellent opportunity of gathering data on other points. Already it has furnished considerable data on gas migration through sand, pressure gradients when gas is moving through sand, pressure gradients when there is no movement (bubble resistance), and the rate at which gas goes into solution in oil in a sand reservoir.

It is hoped that as the experimental work continues, it will be possible to get data on:

1. Variation of bottom hole pressure with rate of production and, hence, the effect of the production rate on the pressure differential between the reservoir and the well.

2. General data on the flow of oil and gas mixtures in vertical pipes which may aid in the design of flow tubing.

3. General data on drainage areas of wells and the extent of interference.

If the objects listed above can be attained, the experimental work will be well worth the expense and effort involved.

Producing Oil With Minimum Pressure Decline at the Sugarland Field

By H. D. WILDE, JR.
Humble Oil & Refining Company, Houston, Texas

THE Sugarland field located in the Texas Gulf Coast area about 25 miles southwest of Houston holds a unique position in the present-day oil fields. It is a field of major importance, where all operations are conducted by a single company, under a plan which has considered the reservoir as a unit, and where gas conservation has been considered to be of paramount importance. All drilling and producing operations have been carried on by Humble Oil & Refining Company. By mutual consent of the company and the royalty owners, a limit of 12,000 barrels per day has been set on the production from the field. By maintaining this limit on the production, it has been possible to make every effort to produce the oil in such a way as to allow the average pressure on the reservoir to fall off as slowly as possible with a given amount of production. This has been accomplished in two ways: 1. The average gas-oil ratio for the field has been kept as low as possible by shutting in the unfavorably situated wells that could not be produced except with high ratios and taking the required production from wells that could be produced with low ratios. 2. With the field producing with a low ratio, all gas that is produced is collected, and 85 per cent or more of it is compressed and returned to the reservoir.

Description of Reservoir

The field is a deeply buried salt dome with the top of the pay 3100 to 3700 feet below the surface. The salt plug has not pierced the producing horizon, so that production is obtained from a dome-shaped bed of sand completely overlying the salt plug. The producing layer is composed of a series of oil bearing sands interbedded with sandy shales, and varies in thickness from 100 to 300 feet. Although the various sands are separated from each other by the layers of shale, it is believed that the shale layers are well broken and that there is sufficient communication between sands to consider them as forming a single reservoir for oil and gas. The remarkable uniformity of the gravity of the oil, bottom hole pressures, and gas composition in the various parts of the field all support the supposition that there is but a single reservoir. For this reason, it is believed that if gas is put into the reservoir at a single point, its influence will be felt over a wide area.

The higher part of the reservoir in the central part of

IMPROVEMENT IN PRODUCTION PRACTICE

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It is hoped that as the experimental work continues, it will be possible to get data on:

1. Variation of bottom hole pressure with rate of production and, hence, the effect of the production rate on the pressure differential between the reservoir and the well.

2. General data on the flow of oil and gas mixtures in vertical pipes which may aid in the design of flow tubing.

3. General data on drainage areas of wells and the extent of interference.

If the objects listed above can be attained, the experimental work will be well worth the expense and effort involved.

Producing Oil With Minimum Pressure Decline at the Sugarland Field

By H. D. WILDE, JR.
Humble Oil & Refining Company, Houston, Texas

THE Sugarland field located in the Texas Gulf Coast area about 25 miles southwest of Houston holds a unique position in the present-day oil fields. It is a field of major importance, where all operations are conducted by a single company, under a plan which has considered the reservoir as a unit, and where gas conservation has been considered to be of paramount importance. All drilling and producing operations have been carried on by Humble Oil & Refining Company. By mutual consent of the company and the royalty owners, a limit of 12,000 barrels per day has been set on the production from the field. By maintaining this limit on the production, it has been possible to make every effort to produce the oil in such a way as to allow the average pressure on the reservoir to fall off as slowly as possible with a given amount of production. This has been accomplished in two ways: 1. The average gas-oil ratio for the field has been kept as low as possible by shutting in the unfavorably situated wells that could not be produced except with high ratios and taking the required production from wells that could be produced with low ratios. 2. With the field producing with a low ratio, all gas that is produced is collected, and 85 per cent or more of it is compressed and returned to the reservoir.

Description of Reservoir

The field is a deeply buried salt dome with the top of the pay 3100 to 3700 feet below the surface. The salt plug has not pierced the producing horizon, so that production is obtained from a dome-shaped bed of sand completely overlying the salt plug. The producing layer is composed of a series of oil bearing sands interbedded with sandy shales, and varies in thickness from 100 to 300 feet. Although the various sands are separated from each other by the layers of shale, it is believed that the shale layers are well broken and that there is sufficient communication between sands to consider them as forming a single reservoir for oil and gas. The remarkable uniformity of the gravity of the oil, bottom hole pressures, and gas composition in the various parts of the field all support the supposition that there is but a single reservoir. For this reason, it is believed that if gas is put into the reservoir at a single point, its influence will be felt over a wide area.

The higher part of the reservoir in the central part of

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the dome contains a considerable amount of free gas, but in the parts of the field down the flanks free gas is absent. From observations made as the wells were drilled in, geologists have estimated that 10 per cent of the reservoir (the space between the sand grains) was filled with free gas and 90 per cent with gas-saturated oil. Although this figure cannot be accepted as being exact, it is sufficiently accurate for engineering calculations. The field is under a mild water drive, as wells at the edge of the field have produced some water with the oil from the start.

The rock pressure existing in the reservoir when the first well was brought in was not measured, but pressures measured on other wells brought in subsequently all indicate that the original rock pressure was between 1450 and 1500 pounds. The gas from separators held at 40 pounds averages 86 per cent methane, seven per cent ethane, four per cent propane, 2.5 per cent butane and heavier, and 0.5 per cent hydrogen sulfide, with but little variation between samples taken at various points. The crude averages 28.3° A. P. I. in gravity, with values from individual wells varying from 28.0° to 28.6°. The solubility of the gas in the crude leaving the separators has been measured at pressures up to 1200 pounds and found to vary linearly with the pressure. At 1000 pounds, the solubility is 144 cubic feet[1] of gas per barrel of gas-saturated oil, and at 1470 pounds the solubility is 211 cubic feet. These are the solubilities at 120°F., the temperature in the reservoir.

Production Data Prior to Gas Injection

The first well in the field began producing in March 1928. Following the completion of the well development of the field was slow for about a year, for by the first of March, 1929, there were only eight wells in the field. During the rest of 1929 drilling was greatly accelerated, and by March 1, 1930, 57 wells had been drilled. Since then very few wells have been drilled.

The return of gas to the reservoir was started April 1, 1930; for up until then no gas had been injected except for a relatively insignificant amount during some early experimental work. By April 1930 the field had produced approximately 5,000,000 barrels of oil and 2,300,000,000 cubic feet of gas. Most of the gas produced was actually metered, but some of that produced the first few months had to be estimated. The average gas-oil ratio during the first period was, therefore, 460 cubic feet per barrel of oil.

All wells, except a few of the early ones, were equipped with two-inch or 2½-inch tubing suspended to within a few feet of the bottom of the hole. From the very start, all wells were equipped with individual gas separators, gas meters, lease tanks, and pressure gages on the tubing and casingheads. In this way, it was possible to secure daily records of the amount of oil, the gas-oil ratio, and the pressures for each well. Wells making high ratios were picked out, and attempts made to lower the ratio by selecting the best rate of production which was varied by the use of chokes. If a well could not be made to flow except with high ratios, it was shut in and the production taken from other wells on the lease. All wells have always been produced through small chokes.

By March 1929 the daily oil production had increased to 12,000 barrels a day. By a voluntary agreement between the royalty owners and the operating company, it was agreed that the production should be held to 12,000 barrels per day regardless of the number of wells drilled. Consequently, as new producers were added, either wells producing with high ratios were shut in or the production from other wells was gradually reduced by the use of smaller chokes. Fortunately, the property boundaries are such that all leases having acreage in the central, gassy part of the field also have acreage in the edge of the field where ratios are low and, hence, in the course of time the high ratio wells could all be shut in without working an injustice to any lease.

By the proper selection of wells, the average gas-oil ratio on the field was gradually reduced. In July 1929 it was 400; in November 1929 it was 375, and in March 1930 it was 265 cubic feet per barrel. As the amount of gas dissolved in a barrel of oil at reservoir temperature and pressure is 211 cubic feet, a ratio as low as 265 is evidence of extremely efficient use of the gas energy in moving the oil to the well. In fact, the average ratio for the entire pre-injection period is much lower than the ratios prevailing in other similar fields. This low gas-oil ratio should be accompanied by a slow decline in the reservoir pressure, which should in turn be followed by a high ultimate yield of oil.

Production Data Since Gas Injection

Gas injection was started April 1, 1930; and although a period of six months has elapsed, it is still too soon to observe any material effect on the field as a whole. Even before gas injection, the reservoir pressure was declining very slowly, so that a change in the rate of decline cannot be readily observed in so short a length of time.

Since April, the production has been held remarkably close to 12,000 barrels per day. The gas produced with the oil has averaged 3,060,000 cubic feet per day, making the average ratio 255 cubic feet per barrel. Pressures of 40 or 50 pounds are held on all gas separators, and the gas sent at this pressure to a central compressor station where it is compressed in two stages to 1450 pounds. Four injection wells have been used, three located in the central part of the field where gas is injected into the free gas zone at the top of the dome. One injection well was located down the flank of the dome to observe the effect of a down-dip injection well upon the surrounding ones. Well head pressures at the injection wells have all been in the range between 1300 and 1400 pounds.

With separator pressures of 50 pounds, about 10 cubic feet of gas is left in solution in each barrel of oil going to the stock tanks. Such fuel as is needed by the drilling rigs, shops, compressor plant, and other utilities at the field is taken from the 50 pounds gathering system and the balance of the gas returned to the reservoir. The gas used for fuel since injection was started has averaged 25 cubic feet per barrel. As all the remaining gas is returned to the reservoir, the average net gas-oil ratio since April has been only 35 cubic feet per barrel; and consequently with this procedure 85 to 90 per cent of the gas produced with the oil has been returned.

After injecting gas in the down-dip well for about three months, several wells near it, but up the dip from it, began to increase their gas-oil ratios; but the nearby wells down the dip were not affected. Evidently, gas was by-passing the oil in going up the dip but not in going down. As the other three injection wells are at the top of the dome, all producing wells are down-dip from them. It is interesting to note that in none of the producing wells has the gas-oil

[1] Throughout this paper gas volumes will be expressed on a 2 lb. pressure base, i. e., at 60 deg. F. and 16.7 lb. per sq. in. absolute pressure.

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ratio been affected by the injection into the wells at the top of the dome. Because the gas was by-passing up the dip, injection into the down-dip well has been stopped.

Effect on Pressure Decline

From the time the field started producing, it has been the aim to produce the field in such a manner that for a given amount of oil removed the reservoir pressure should decline as little as possible. It is interesting to compare pressures over the past 30 months.

The original rock pressure was never measured accurately; but from pressure observations in the early days and as wells were drilled into new areas, it is believed that the original pressure was between 1450 and 1500 pounds. A value of 1470 pounds has been used in all calculations. Data on bottom hole pressures measured directly have been meager because of the absence of adequate methods for direct measurement. However, the bottom hole pressures for a large number of the wells have been calculated at frequent intervals between November 1929 and the present time. The calculations have been based on the amount of gas and oil produced and the tubing head and casinghead pressures, making allowances for slippage in the flow string. Although it cannot be said that these calculated values are absolutely accurate, they should be reasonably so; and, furthermore, they should be comparable. On several wells, the bottom hole pressure records have been quite short because they were only recently drilled, but for 24 wells the records cover a period of 11 months. Of these wells, 14 showed no change in bottom hole pressure; five showed an average drop of 85 pounds, and five showed a small increase. The arithmetic mean value for the bottom hole pressure of 28 out of the 37 wells flowing on September 1 was 1400 pounds. Thus, it is evident that the reservoir pressure has declined only slightly, especially when it is realized that bottom hole pressure must be less than reservoir pressure by an amount equal to the pressure differential driving the oil from the reservoir to the well. These data indicate that the reservoir pressure has declined only about 70 pounds. Allowing for possible errors in the bottom hole pressure calculations, it seems safe to say that the decline has not exceeded 200 pounds. This is a remarkably small decline in the reservoir pressure, when the fact that about 7,000,000 barrels of oil have been produced from the field is considered.

In a paper presented at the October 1929 meeting of the American Institute of Mining and Metallurgical Engineers,[2] an equation was derived which can be used to show the relation between the reservoir pressure and the percentage of the oil removed for a given gas-oil ratio. This equation will be used here to show the tremendous advantage of gas conservation and return of gas to the reservoir.

It is believed that if Sugarland had been developed in the customary manner, the gas-oil ratio would have averaged at least 1000 cubic feet per barrel over the productive life of the field. This is a low value when compared to ratios prevailing in other fields, both in the Gulf Coast and elsewhere, that depend mainly on gas energy to drive the oil to the well. If an average ratio of 1000 cubic feet per barrel were to prevail at Sugarland, the reservoir pressure would decline as shown by Curve 1, Figure 2. The decline would be very rapid and the reservoir pressure would fall to atmospheric by the time that only 21 per cent of the oil originally in the reservoir had been produced. As the movement of oil at Sugarland depends mainly on gas energy, if the ratio were 1000 cubic feet per barrel, the field could not produce more than 21 per cent and would probably produce less.

As a result of gas conservation measures used prior to gas injection, the average gas-oil ratio for this period was reduced to 460. If this ratio were to be maintained throughout the life of the field, the pressure would decline as

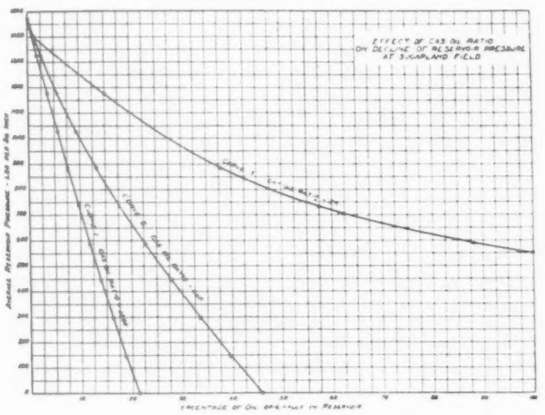

FIGURE 2

shown by Curve 2, Figure 2. With this ratio the reservoir pressure would not fall to atmospheric until 46 per cent of the oil had been produced. It is doubtful whether as much as 46 per cent would be produced under these conditions, as this is the absolute upper limit of production for this ratio. The probable actual limit is somewhat less, perhaps 30 to 35 per cent. However, the actual limit is considerably greater than the 21 per cent set by the 1000 cubic feet per barrel ratio, and the improvement in gas-oil ratio could account for 10,000,000 to 15,000,000 barrels greater ultimate recovery.

Since April 1, 1930, 87 per cent of the gas produced has been returned to the reservoir, and the net gas-oil ratio has been only 35 cubic feet per barrel. If this net ratio can be maintained throughout the rest of the life of the field, the reservoir pressure should decline according to Curve 3. Were it possible to remove 100 per cent of the oil from the reservoir, the final pressure in the reservoir would be 550 pounds; but as this is impossible, the reservoir pressure will always be greater than 550 pounds. Whether production will cease when 40, 50, or 60 per cent of the original oil is produced, no one is now in a position to predict; but if a net ratio of 35 prevails, the pressure in the reservoir when production ceases will be 600 pounds or more. With the reservoir pressure always in excess of 600 pounds conditions should be very favorable for high ultimate recovery.

Benefits and Costs

Two benefits from the return of gas to the sand are at once apparent:

1. With the low net gas-oil ratios possible with return of the gas, the reservoir pressure declines slowly; and after given oil withdrawals, the reservoir pressure will be much

[2] Coleman, Wilde, and Moore, "Quantitative Effect of Gas-Oil Ratio on Decline of Average Rock Pressure," *Trans. of Am. Inst. Mining Met. Eng.*, 1929, petroleum division, p. 174.

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higher than it would be without gas return. Furthermore, the absolute limit on ultimate production is greatly increased. The actual ultimate production will not keep pace with the extension of the limit, but with the slower pressure decline the actual ultimate production should be increased very materially.

2. With the slower reservoir pressure decline, the bottom hole pressure will at all times be greater and the flowing life of the field greatly extended, probably throughout the entire productive life. The pumping cost on a large volume of oil would be saved. The monetary value of this saving would be considerable.

Contrary to popular belief, the cost of compression to the high pressures needed for gas injection in the early life of the field is not excessive. The compression plant at Sugarland compresses gas from 40 pounds, the pressure held on the traps, to 1450 pounds; and although the plant is not operating at full capacity, the cost is only seven to eight cents per 1000 cubic feet. When operating at full capacity, the depreciation, labor, and overhead would not increase, so that the cost would be slightly less than seven cents per thousand. The plant handles only 230 cubic feet of gas per barrel of oil produced, so that the cost of gas return is less than two cents per barrel of current production. Even if gas return were not to increase the ultimate recovery of the field but merely extended the flowing life, the saving in lifting cost on the large volume of oil that would otherwise be pumped would alone pay for the cost of gas injection. There is expected, however, a material increase in the ultimate recovery. As the reservoir becomes depleted, gas will by-pass from the injection to the producing wells, and the amount of gas handled per barrel of oil will increase beyond the present value of 230 cubic feet per barrel. Even assuming that as much as 3000 cubic feet of gas must be handled by the plant for each additional barrel of oil produced, the cost would be only 25 cents per barrel and the venture would be profitable. In all probability an average of less than 3000 cubic feet of gas per barrel of additional oil will be required.

The question may arise as to whether it would not be preferable to postpone the return of gas until the reservoir pressures has fallen to some lower value, say 1000 pounds, to avoid the high cost of compressing the gas up to the pressures required for early injection. The saving in compression cost is not as great as might be supposed. Of course, the machinery, fittings, and liners for 1500 pounds service are more expensive than for 1000 pounds, but not greatly so. The cost of the compressors and the power required depend upon the compression ratios, and not on the pressures. It would cost less to compress a given amount of gas from 40 pounds to 1450 pounds than it would from 10 pounds to 1000 pounds. By raising the gas separator pressure to 40 pounds, the injection at 1450 pounds in the early life of the field would be no more expensive than injection at 1000 pounds later. The early injection would have the advantage that the reservoir pressure would at all times be several hundred pounds higher.

Humble Oil & Refining Company firmly believes that wherever an oil pool depends upon gas energy for oil movement to the well and it is possible for a single operator or a group of operators to develop the pool as a unit, the cost of conserving the gas and returning it to the reservoir will be amply repaid by a reduction in lifting costs and an increase in the amount of oil recovered from the pool.

Conservation and Utilization of Gas, Sugarland Oil Field, Texas

By MERCER PARKS

Humble Oil & Refining Company, Houston, Texas

EARLY in the development of this field, the importance of conserving gas energy was recognized, and the wells were equipped and produced accordingly; while wells of excessively high gas-oil ratio have been closed in entirely. All wells were equipped with tubing to act as flow strings. It was soon recognized that certain wells located on the top of the structure could not be held to a low gas-oil ratio either by change in size of flow string or by choking. Rather than produce oil with a useless waste of gas energy, it was decided to shut in all wells that produced excessive gas. The shutting in of the high ratio wells has sometimes necessitated the shutting in of offset wells on adjoining leases where ratios were within reason. The shut-in wells are in the following classes.

1. Shut in on account of being located high on structure where free gas is encountered.

2. Shut in on account of their method of completion.

3. Shut in on account of being offset by well which could not be produced within reasonable gas-oil ratio.

4. Shut in as an aid to proration.

From the experience in the Sugarland field in shutting in wells, it may be said that the shutting in does not affect the ratio tendencies of most of the wells when put back on production. Wells re-opened take up where they were when shut in.

It is difficult to arrive at any definite figure for the gas kept in the ground by this method of shutting in wells. The wisdom of the procedure, however, is unquestionable. The wells shut in on top of the structure had an average gas-oil ratio of approximately 3000. By the methods of gas conservation used in the Sugarland field, there must have been at least as much gas left in the ground as has been produced, and this gas still in the ground is in a position to do useful work in lifting oil to the surface, where it before it would have been wastefully produced by wells of high and uncontrollable gas-oil ratios.

Use of Tubing as a Flow String

The use of tubing as a flow string has generally been accepted as good practice in producing flowing wells, but there has been no great amount of definite information on advantages of using tubing as against flowing through the casing. In this connection the results obtained in the Yates oil field[3] are worthy of mention.

Data from 55 representative wells have been used in presenting this report. The advantages of tubing wells have been considered to be four-fold. 1. Increasing the production of small wells that did not have enough gas to produce steadily through casing. 2. Increasing back pressure, thus tending to delay water encroachment. 3. Removal of water when it first appears, thereby preventing flooding. 4. Gas conservation by reduction of gas-oil ratios, insuring the greatest ultimate recovery.

Many wells near the edge of the structure produced at rates of five to 30 barrels per day flowing by heads. Records

[3] "Effects of Tubing Flowing Wells, Yates Field, Texas," by H. H. Hardison, California Company, Midland, Texas, in collaboration with the Yates Field Engineering Committee. Presented at the fall meeting of the southwestern district, A. P. I. Division of Production, Galveston, Texas, Sept. 4, 1930.

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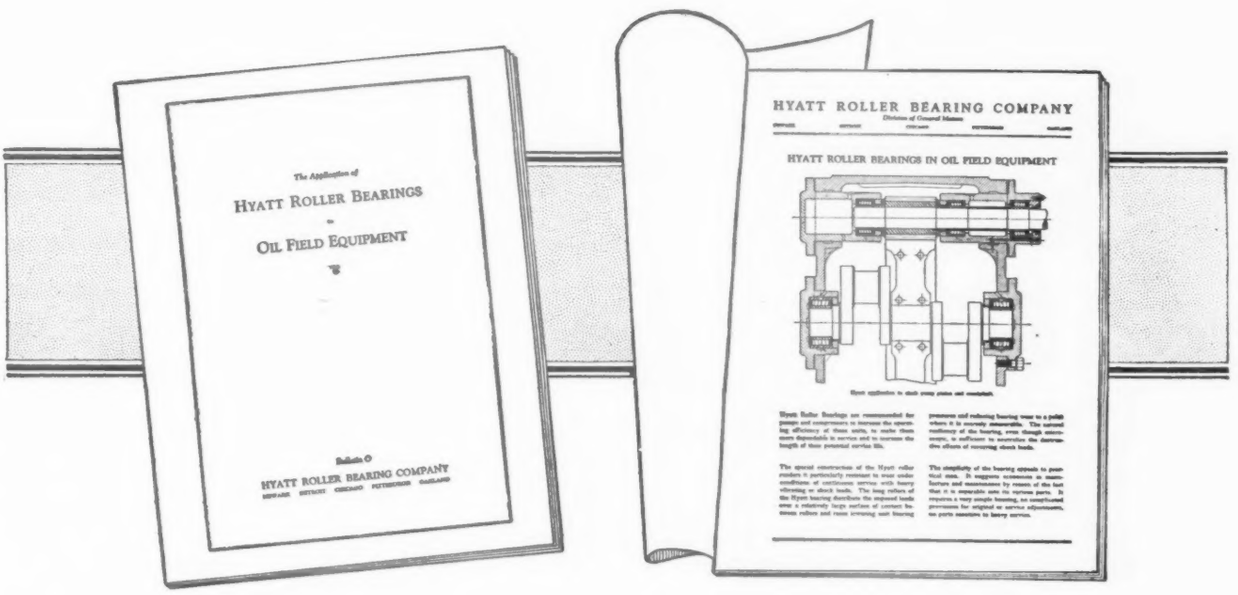

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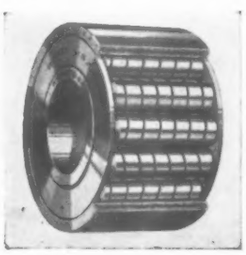

Equipment builders and operating men interested in modern design will find this bulletin useful and timely. Based on the knowledge obtained from years of experience with many successful installations, its contents reflect a thorough understanding of oil field equipment requirements. Its suggestions will appeal to practical men whose concern is the building or purchasing of equipment capable of profitable operation.

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were obtained on five wells in which one-inch tubing had been run. In four cases the production was raised 100 to 150 per cent, and the wells flowed steadily. The other well, which had been making one head a day of five barrels, began flowing steadily but at no greater rate.

One company has 12 edge wells which were tubed with two-inch tubing. The total production before tubing was 1402 barrels per day with a gas-oil ratio of 1146 cubic feet per barrel. After tubing, the average production for the first 30 days was 1711 barrels with a gas-oil ratio of 933 cubic feet per barrel.

Another company tubed 13 wells with two-inch tubing for the purpose of reducing gas-oil ratios. The average production of oil per day was the same before and after tubing due to proration. It was found that the average reduction of gas-oil ratios was 34 per cent.

The tabulation below shows that in the 55 representative wells tubing is saving 4,028,000 cubic feet of gas per day. This is a gas saving of approximately 33 per cent by volume, while the oil production was increasing 1057 barrels per day. The oil increase is due in part to raising the production of small wells and in part to the difficulty of regulating the flow of the large wells to the same rate as before tubing.

It is noted that different companies had .arying results, which are due to either the type of well or the size of tubing placed in the well. In cases where the per cent of reduction of gas-oil ratios was low, the wells shown were of many different types.

	Before Tubing			
Company	No. Wells	Oil Barrels Per Day	Average Gas-Oil Ratio	Gas Thousand Cubic Feet Per Day
"A"	13	1,759	825	1,448
"B"	5	1,322	908	1,201
"C"	14	4,570	1,310	5,981
"D"	11	1,784	1,031	1,813
"E"	12	1,402	1,146	1,607
Totals	55	10,837	1,112	12,050

	After Tubing				
Company	No. Wells	Oil Barrels Per Day	Average Gas-Oil Ratio	Gas Thousand Cubic Feet Per Day	Per Cent Reduction in the Gas-Oil Ratio
"A"	13	1,986	542	1,079	34
"B"	5	1,322	814	995	10
"C"	14	5,091	570	2,891	56
"D"	11	1,784	831	1,461	19
"E"	12	1,711	933	1,596	19
Totals	55	11,894	674	8,022	39

Additional information on the value of tubing has been obtained in the Sugarland oil field, Texas.[4]

Practice in this field has been to run two-inch tubing before finally bringing the well in as a producer. The tubing is placed within 10 feet of the bottom of the hole.

This practice of tubing wells has been carried on to the present time, because it was felt by both practical and technical men that the practice was correct and economical from all viewpoints. Recently a number of tests have been made for the purpose of obtaining data on which to base actual proof of the merits of tubing. These tests have consisted of flowing certain wells in the field on a series of different chokes with production coming through the tubing, and then taking the same sized chokes and flowing the well between the tubing and casing.

The first well selected for a test has always been considered a freak well, inasmuch as it has been inconsistent with the surrounding wells with regard to gas-oil ratio. By some unexplained circumstance, the ratio has always been far above normal when flowed through chokes one-quarter-inch in diameter or larger. The well was flowed through the annular space between the tubing and casing, and also through two-inch tubing, (casing is seven inches outside diameter A. P. I.). A tabulation of the results is given below.

WELL "A"

Flow Through the Annular Space

Choke (Inch)	Barrels Oil Per Day	Gas Thousand Cubic Feet	Ratio
¼	90	1,022	11,400
3/16	48	740	15,416
⅛	15	257	17,133
5/16	138	1,376	9,950

Flow Through the Tubing

Choke (Inch)	Barrels Oil Per Day	Gas Thousand Cubic Feet	Ratio
¼	339	610	1,799
3/16	150	33	353
⅛	60	29	483

The data clearly demonstrates the efficiency of flowing this well through the tubing.

Two other wells were taken for test in the same manner. These wells were selected as being typical producers in the Sugarland field. They were drilled deep enough to take in practically all of the producing formation, and were producing with gas-oil ratios normal to the parts of the field in which these wells were located. While they are rather far apart in the field, they are similarly located on the structure, and are in that zone between the free gas area and the edge of the field where it has been found the most advantageous to produce oil, since the wells in this area are likely to have a favorable gas-oil ratio when compared to that of the whole field. Below will be found a tabulation showing results of the tests. (The casing size is seven-inch outside diameter A. P. I. and the tubing is two-inch A. P. I.).

WELL "B"

Flow Through the Annular Space

Choke (Inch)	Barrels Oil Per Day	Gas Thousand Cubic Feet	Ratio
¼	260	64	246
⅜	795	208	262
½	1,317	360	273

Flow Through the Tubing

Choke (Inch)	Barrels Oil Per Day	Gas Thousand Cubic Feet	Ratio
¼	307	68	221
⅜	803	210	262
½	1,086	209	192

[4] Mercer Parks, Humble Oil & Refining Co., Sugarland, Texas.

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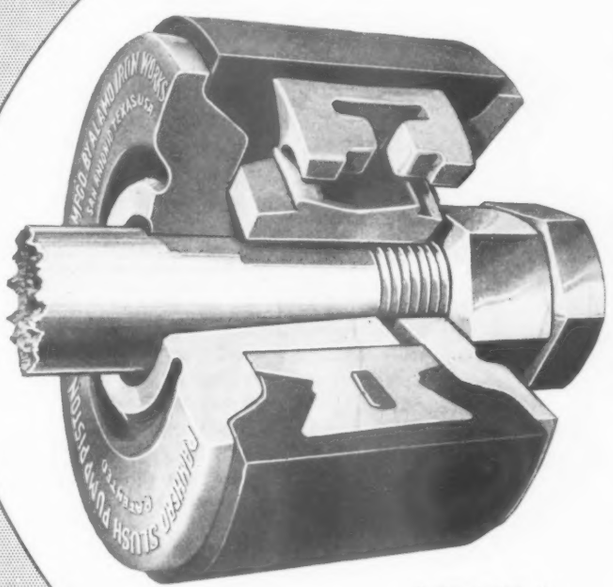

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WELL "C"

Flow Through the Annular Space

Choke (Inch)	Barrels Oil Per Day	Gas Thousand Cubic Feet	Ratio
¼	323	80	247
⅜	800	255	319

Flow Through the Tubing

Choke (Inch)	Barrels Oil Per Day	Gas Thousand Cubic Feet	Ratio
¼	333	73	219
No test			
⅛	73	13	178

From the preceding data we may draw the following conclusions:

Tubing has been very valuable in economizing with gas in the production of oil from well "A." The well is located in the most closely drilled section of the field, and because of an offset well it must be produced. It will be noticed that the lowest gas-oil ratio obtained in the flow through the annular space between tubing and casing was more than five times that of the highest ratio that was obtained through the tubing.

In the cases of wells "B" and "C" it is noted that, for most of the chokes tried for both casing and tubing, the ratio for the flow through tubing is distinctly more favorable than that for flow around the tubing. In one case, the ratios are the same, but in all the others, tubing seems to have some slight advantage over the casing. This holds true only for the sizes of chokes tried, but the sizes tried comprise the range of choking that has been used in this field; and with the present conditions in the industry likely to prevail for some time, it seems unlikely that larger chokes in order to increase rate of production from each well will be needed in the near future. In the light of these experiments, it would seem that the gas production of the average well of the field has been reduced at least 10 per cent by the use of tubing as a flow string. Stated in another way, the field has produced through the tubing only 90 per cent of the gas that would have come with the oil had the casing been used for the flow string; and, consequently, the gas so held in the formation is still capable of doing useful work in bringing oil to the hole and out of the well to the surface, and also result in a greater ultimate yield.

T. W. Rhodes[5] made the following report regarding the use of tubing.

"Tubing wells for gas conservation has been a complete success, and is now being done in most of the new fields in the Permian Basin. Besides conserving the gas, it causes wells to flow steadily over a longer period of time. Also, it relieves the trouble and expense of treating cut oil from wells making water that can be operated under back pressure, as the water flow is uniform and continuous, permitting the use of high pressure oil-water separators. After wells have ceased to flow, the tubing can be utilized for pumping. Therefore, tubing program, instituted by all the operators in a new field, is greatly to be desired. Our experience has shown that ultimate oil recovery can be considerably increased in this manner with little, if any, addition to the equipment cost which would be necessary under the older method of waiting until natural flow has ceased before installing tubing."

[5] Gulf Production Company, Fort Worth.

Tubing Wells Under Pressure

By H. A. BRETT

Union Oil Company of California, Santa Fe Springs, California

TO obtain the maximum production efficiency from a well, it is usually necessary to change the tubing conditions several times during the life of the well. Heretofore, to make these changes, it has been necessary to kill the well, an expensive and often times hazardous operation, considering the loss of production, as the result of down-time required to perform the operation, and the possibility of the well blowing in out of control.

Another feature of well control which has caused considerable difficulty is the starting or kicking-over of deep gas lift wells in which the depth of the tubing is 5000 feet or over. Kick-over pressures for wells thus tubed are so great as to be impractical, both from the standpoint of safety and the special equipment required such as compressors, pipe fittings, etc.

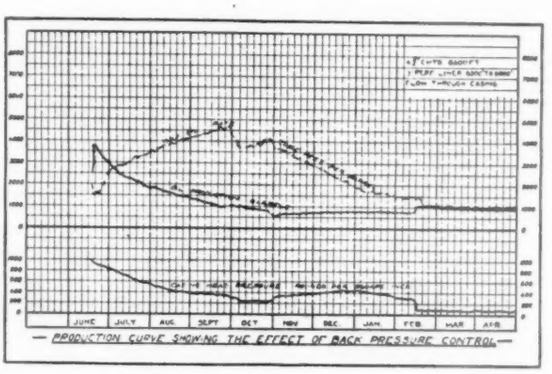
To overcome the difficulties mentioned above, a device has been perfected whereby a naturally flowing well may be tubed from the surface, or the tubing in such a well previously tubed may be lowered or raised without any interruptions of its flow. In the case of a gas lift well, its tubing may be raised or lowered without any interruption of production or flow or circulating gas. The device is of great value in lowering tubing in deep gas lift wells, for the reason that circulation may be started with the tubing at a moderate depth which requires only normal pressure, and then lowered to any desired depth. As circulation is continuous, the fluid column is aerated at all times, and hence no excessive pressures are required.

CONTROL OF FLOWING WELLS[6]

As gas is the chief expulsive force by which oil is brought to the well bore and to the surface, its conservation and efficient use are highly important if the maximum recovery is to be obtained from the reservoir. It follows, therefore, that the amount of gas produced per barrel (the gas-oil ratio) is an indication of production efficiency, the lowest gas-oil ratio possible, of course, being the most desirable. A comparison of gas-oil ratios is possible only between similar wells in a given reservoir.

Gas-oil ratios are subject to control by means of back

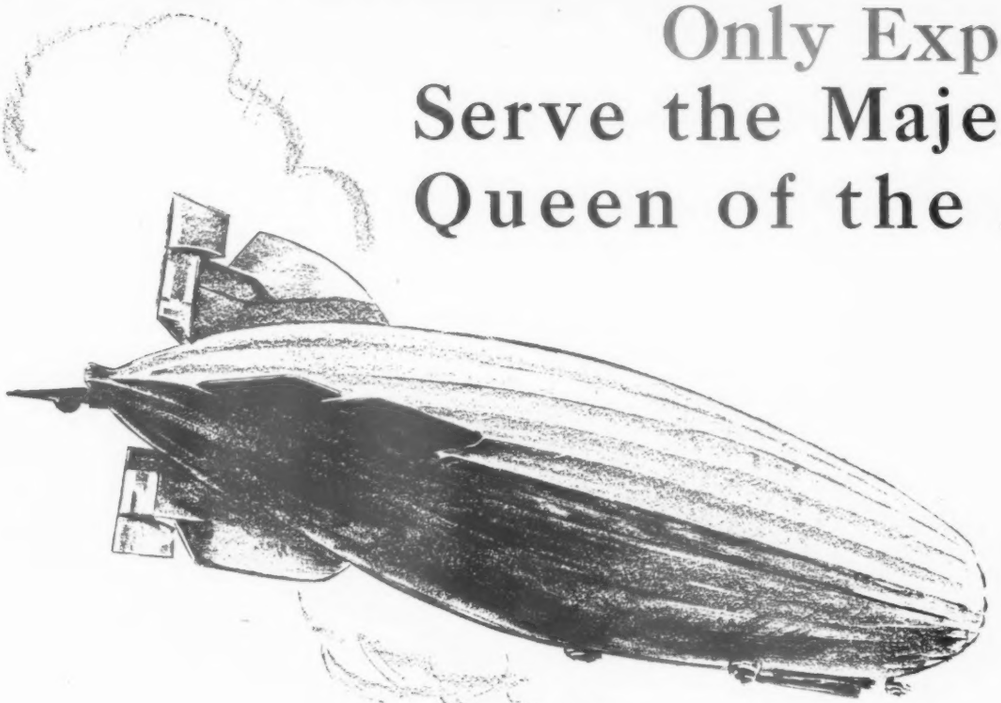
[6] Information furnished by H. A. Brett, Union Oil Company of California, Santa Fe Springs, California, and Mercer Parks, Humble Oil & Refining Company, Sugarland, Texas.



— PRODUCTION CURVE SHOWING THE EFFECT OF BACK PRESSURE CONTROL —

FIGURE 3

Only Experts Serve the Majestic Queen of the Air



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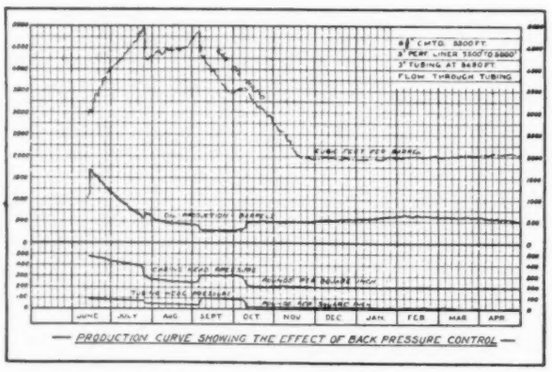
IMPROVEMENT IN PRODUCTION PRACTICE



— PRODUCTION CURVE SHOWING THE EFFECT OF BACK PRESSURE CONTROL —

FIGURE 4

pressure, size, and depth of tubing. As tubing changes are made with difficulty once the well is on production, the control of the gas-oil ratio is accomplished at the surface by means of back pressure, either by choking or trap pressure. The latter is the more desirable, as the gas energy is then available for such uses as gas lift, repressuring, sales, etc. The optimum back pressure varies with each well, and is different in a given well at different periods during its life.

Each well should be so equipped that changes in back pressure are readily made, and results observed in order that a measure of production efficiency may be obtained.

In order that the required changes in the flowing conditions may be made in an intelligent manner, a complete daily record of performance must be available. This record consists of an accurate measurement of both gas and oil and also the pressure on the casing, tubing, and gas traps. Recording gages are much to be preferred to dial gages.

Examples are given which illustrate the effect of back pressure control on gas-oil ratios and production. Figure 3 is the production curve of a well at Santa Fe Springs. The size of the oil string was such that no tubing was practical, so all back pressure control was of necessity accomplished with beans and pressure regulators. No change in flowing conditions was made until the end of September, and at that time the pressure was reduced in two stages from 350 to 250 pounds. The gas-oil ratio showed a decided drop, and the rate of production decline was moderately reduced. The well was allowed to flow at 250 pounds for three weeks, during which time the gas-oil ratio showed a tendency to increase. The pressure was then gradually increased, which resulted in a fairly rapid decline in the gas-oil ratio and a gradual increase in production. During January and the first half of February, the casinghead pressure slowly declined and production remained almost constant, but the rate of decline of the gas-oil ratio decreased. In fact, toward the end of the period, it showed a tendency to increase. Back pressure was then reduced to 100 pounds, which resulted in an increase in production and a drop in the gas-oil ratio, both of which remained practically constant to the end of the curve. This curve illustrates a very definite relation between the gas-oil ratio and the ultimate recovery.

Figure 4 illustrates the same relationship between the gas-oil ratio and the production in a well equipped with tubing. Both curves illustrate what can be done with a well if it is properly controlled. To obtain the maximum benefit from back pressure control, old wells in a given area should be handled in the same manner. The wells whose curves are here illustrated are located in areas in which surrounding wells are under pressure control.

Below is a discussion of results obtained in the Sugarland oil field, Texas. One of the wells completed near the top of the structure came in with an oil production of 225 barrels daily and about 4,500,000 cubic feet of gas during the same period. The resulting gas-oil ratio was about 20,000. The choke was one-half-inch and was immediately changed to three-eighths-inch, with the result that the gas-oil ratio dropped to 8000 as the oil production rose to 275 barrels and gas to 2,000,000 cubic feet. Further choking to a one-quarter-inch resulted in the reduction of the ratio to about 3000 cubic feet to the barrel, with the production of oil still holding at 275 barrels per day. The results of choking on this well show that it was beneficial to the well in that the gas-oil ratio was reduced to about 15 per cent of its former value, as the actual volume of oil produced increased with decrease in the size of choke; and had it been absolutely necessary to produce from this location, choking would have been of valuable assistance in the conservation of gas. This well was later closed in, and is now used for the purpose of re-injecting gas back into the reservoir.

Another well was producing with a gas-oil ratio of 300 through a three-eighths-inch choke when a one-quarter-inch choke was installed. The ratio was reduced to 150 feet per barrel, but in a few months it went back to 200. This is an instance where a well operating with a normal gas-oil ratio was materially affected by more severe choking.

A third well was completed producing 640 barrels of oil and 780,000 cubic feet of gas daily on a three-eighths-inch choke, which is a gas-oil ratio of 1220. This was considered excessive, and the choke was changed to one-quarter-inch. For the first few days, the reduction in oil production was much greater than the reduction in the gas, and the ratio rose to 2400 but in the course of two weeks the gas production fell off from the 780,000 to 200,000, and the ratio dropped to approximately 600. Since that time, the ratio gradually declined to a gas-oil ratio of 400.

A fourth well was completed on a three-eighths-inch choke and with an initial gas-oil ratio of 3600. The choke was changed to one-quarter-inch and the ratio dropped to 900 overnight; but inside of two months it had gradually increased to 2400. A change to a one-eighth-inch choke resulted in the cutting of oil production to about 75 barrels daily, and the gas dropped to 30,000 cubic feet to give the well a gas-oil ratio of 400. An increase in the choke size to three-sixteenths-inch resulted in the increase of the oil production to 125 barrels, the gas to 50,000 and a gas-oil ratio held constant at 400. The well was again flowed on a one-quarter-inch choke, with the result that the gas-oil ratio immediately increased to 1800. The production records for this well show that for chokes larger than three-sixteenths-inch, the ratio is abnormally high.

The above wells are described to show how wells located high on the structure react to choking. Other wells on the flanks of the structure which are naturally efficient from the viewpoint of gas-oil ratio do not react to any great ex-

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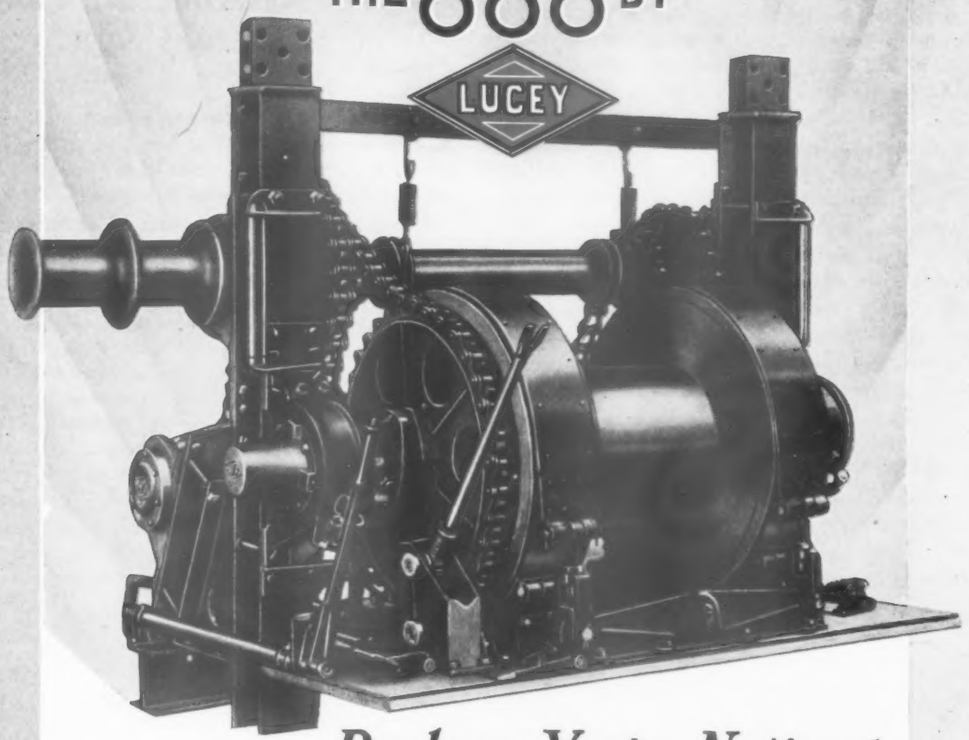

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IMPROVEMENT IN PRODUCTION PRACTICE

tent to changes in choke size. They are the wells from which it is desired to produce, since they have a ratio lower than the average for the field. The wells above discussed as being effected by the change of chokes have been relatively high ratio wells for the Sugarland field; and although the ratio has been decreased by reducing the size of the choke, the relief has been only temporary and the curve of the ratio has been on an upward trend at all times. On the other hand, the wells below the free gas zone and above the water zone have, as a whole, exhibited the tendency to drop off faster in gas production than in the oil; and, consequently, the ratio curve has gradually tended down.

Another interesting feature in the Sugarland field is that the wells respond immediately to changes in choke size. The general rule, with of course some exceptions, seems to be that wells require very little time to come to an equilibrium after a choke change; and if there is to be a change in the production and ratio, the change will be noted in a very few hours, but most of the time immediately.

It must be understood in the above discussion of choking and its effects in the Sugarland field that the chokes under question are one-half-inch and smaller. There are no data on larger ones, for the field has been held on chokes of small sizes since the first; and, with present conditions prevailing in the industry, it is doubtful that larger chokes will be used for some time to come.

Utilization of Energy Available in Gas As the Result of High Pressure Gas-Oil Separation

By H. A. BRETT

Union Oil Company of California, Santa Fe Springs, California

ONE of the greatest economies which can be practiced in the operation of an oil field is the conservation and use of the energy contained in the gas from high-pressure naturally flowing wells.

Naturally flowing wells must be operated against certain back pressure if they are to be produced in an efficient manner. This back pressure is controlled at the surface by beans or by pressure regulators. If chokes are used and the gas expanded to a pressure just sufficient to operate an absorption plant, or blown to the air, the contained energy is dissipated without performing any useful work. If, on the other hand, the gas is expanded in a high pressure gathering system, the energy contained therein becomes available for use in several operations, and the company benefits in actual saving and in increased revenue.

Some of the benefits derived from the conservation and use of high-pressure gas may be itemized as follows:

1. Saving in trap costs. One high-pressure primary trap used in conjunction with one low-pressure secondary trap

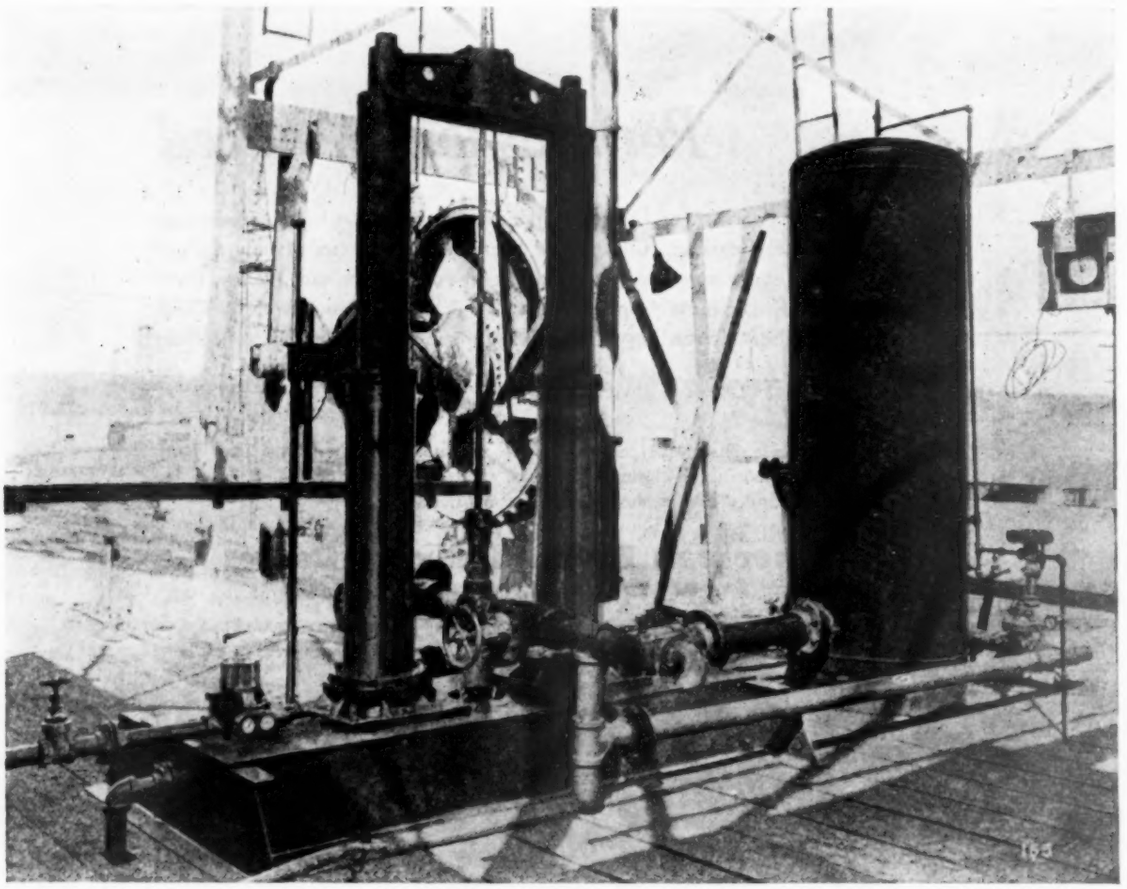

FIGURE 5
Photograph showing gas operated jack on pumping well

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will accomplish the same result as several low-pressure traps. This item amounts to a saving of approximately $4000 per well, in some instances.

2. Saving in compression costs. This includes capital outlay and interest on the investment of compressor plants as well as operating costs. This saving is accomplished by using gas directly from the high-pressure gathering system for repressuring and the operation of gas lift wells. In many instances, the pressures required for these operations will be greater than that available, and recompression will have to be resorted to, but at a cost far below that required to raise the pressure from atmospheric, or even 30 pounds.

3. Sales to industrial and domestic gas companies. Wet gas under high pressure is readily disposed of to gas companies, which otherwise would have been blown to the air, as the cost of installing compressors to raise the pressure to that required by the gas company would, in most cases, be prohibitive. This item represents an actual cash return of many thousands of dollars per year.

4. It is often possible to sell excess high-pressure gas to other operators for treatment in their absorption plants.

5. Saving in pipe line costs due to increased capacity of lines transporting high-pressure gas.

As an example of what has been accomplished by one company at Santa Fe Springs, California, during the last two years, as the result of utilizing high-pressure separation, the following figures are quoted:

Item 1. Saving in gas trap expense	$150,000
Item 2. Saving in compression costs on high-pressure gas actually utilized	480,000
Item 3. Saving on all gas sold (otherwise blown to air)	206,000
Item 4. Profit on gasoline royalty recovered from treating high-pressure gas (other companies)	26,000
Item 5. Savings due to decreased pipe line costs.	40,000
	$902,000

From the above, it is quite evident that the utilization of high gas-oil separation pressures at the well is a very profitable procedure and one of the outstanding advances made by oil companies during the past few years.

A recent development in pumping equipment[7] is a gas-operated jack that has much merit; and although used to limited extent, it is worthy of mention due to the fact that gas energy is utilized for its operation. This equipment may become an important factor in the rod pumping of deep wells. The illustration (Figure 5) shows a unit in operation.

The use of large areas and the counterbalancing action of compressed gas in the large tank, shown at the right in the photograph (Figure 5), makes possible its use on deep wells without excessive pressures (125 pounds to 150 pounds for 5000 feet lift).

Oil is used between the inside ram and the counterbalance pressure tank. An ingenious arrangement of throttling valves in the gas and counterbalance oil lines makes possible almost any type of pumping motion desired. At present these jacks are made in two sizes, six and 10 foot strokes. The stroke length may be varied in any individual installation from one foot to maximum by changing the position of the rods, shown at the left in the photograph. The speed may be varied from one to 10 strokes per minute by the throttling valves. Changes of speed, stroke length, and motion may all be varied in a few minutes.

The first cost is not excessive, and the installation cost low. A jack can be installed in a rig with a cellar in about four hours. The following tabulation gives a few of the pertinent figures on this equipment:

Jack, six-foot stroke	$2,700
Jack, 10-foot stroke	3,000
Installation cost, rig with cellar	100
Installation cost, rig without cellar	300

Stroke, one foot to six-foot or 10-foot.
Speed, one to 10 strokes per minute.
Operating pressure—two-inch pump, 15 pounds per 1000 feet.
Operating pressure — 2½-inch pump, 20 pounds per 1000 feet.
Operating pressure—three-inch pump, 25 pounds per 1000 feet.
Gas consumption:
1000 cubic feet per barrel lifted at 2500 feet.
2000 cubic feet per barrel lifted at 4500 feet.
3000 cubic feet per barrel lifted at 5500 feet.

Most of the deep fields of today are operated for a time on the gas lift. At such time as the decline of the well warrants the change from gas lift to pumping, the gas operated jack could be installed. Many wells produce sufficient gas under sufficient pressure to operate the jack without outside power. As soon as the gas production falls to the point where outside pressure must be used, the gas lines and facilities used for gas lift may be used for operating the jacks. Inasmuch as this equipment is already installed, it cannot be considered as an investment charged to the jack. Under such conditions, it seems highly probable that the gas-operated jack may have an important place in the economic development of the deeper fields.

Power to operate this jack may also be obtained by double trapping flowing wells from which high-pressure (150 pounds) gas may be obtained; thus utilizing gas energy as supplied by producing wells.

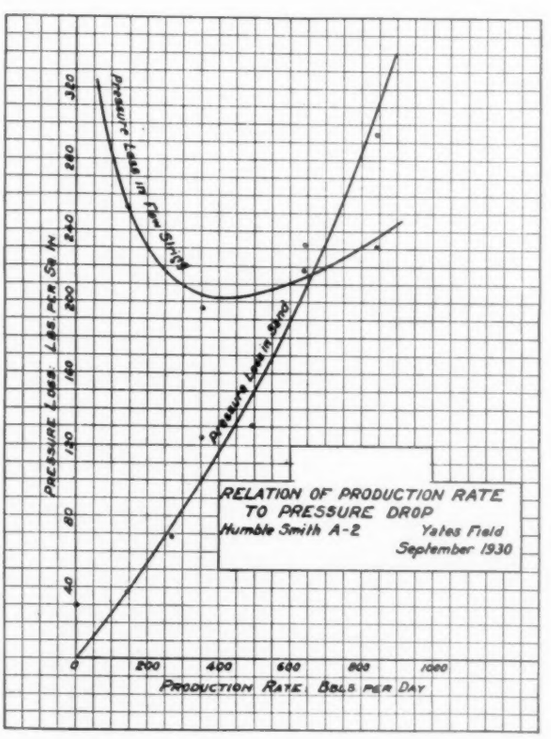

FIGURE 6

[7] J. H. Wallace, Union Oil Company of California, Santa Fe Springs, California.

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IMPROVEMENT IN PRODUCTION PRACTICE

Determination of Potential Production of Wells Without Open Flow Test

By T. V. MOORE
Humble Oil & Refining Company, Houston, Texas

WATER encroachment and the wanton dissipation of gas energy can, in most instances, be effectively checked by the use of efficient production methods and by removing oil from a natural reservoir at comparatively slow rates. Hence, if the waste of an invaluable and irreplaceable natural resource is to be kept at a minimum, a sound operating policy will demand restricted production, even though the economic factors which have forced curtailment upon the industry should cease to exist.

In the restriction of the production of a given field to a reasonable value, the problem of an equitable system of proration at once arises. It has been considered good prac-

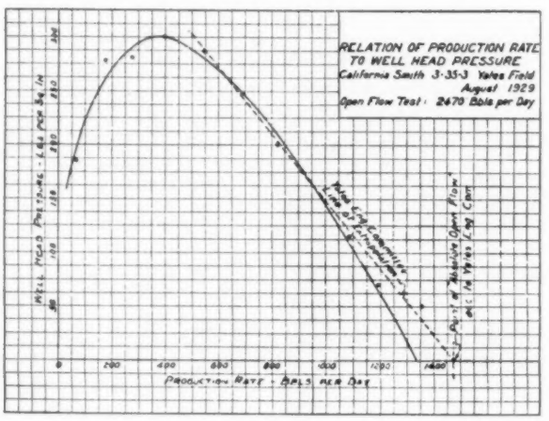
RELATION OF PRODUCTION RATE TO WELL HEAD PRESSURE
California Smith 3-35-3 Yates Field
August 1929
Open Flow Test: 2470 Bbls per Day
Point of Absolute Open Flow as in Yates Log Log Curve
PRODUCTION RATE: BBLS PER DAY

FIGURE 7

tice to allow each operator a certain production, which is, to a large extent, proportional to the potential production of his holdings. The potential production of wells in such fields is usually determined by an open flow test, which consists in measuring the production of a given well under open flow, for a period of time which is frequently as short as one hour. Even this short period of unrestricted production has in many cases led to serious water encroachment, which may result in permanent injury to many wells. Furthermore, the open flow test does not give an accurate gage of a well's capacity. The open flow production of a well for a short period of time is dependent, to a great degree, upon the history of the well just prior to taking the open flow test. For this reason, the open flow test is a measure not only of the capacity of the well, but also of the skill of the man in charge of the test. These disadvantages are apparent to many operators, who realize that a satisfactory method of determining potential productions of wells, other than by open flow, would be of great value.

In order to present the problem more clearly, the factors which limit the potential production of wells should be considered. The energy used in driving oil from the formation to the surface causes pressure losses, which may be divided into two groups: the pressure losses in the sand and the pressure losses in the flow string. The pressure losses in the sand increase steadily with the rate of production, causing the bottom hole pressure to fall off as production rate is increased. In large wells, this decline of bottom hole pressure is comparatively slight, while in the smaller wells it is much greater. The pressure losses in the flow string, however at comparatively low rates of flow, will decrease as the rate of production increases, due to a reduction in the fraction of the energy lost in slippage. Further, increase in production rate will cause increased friction losses, which may reach excessive values, and thus will more than offset the reduction in slip losses. Thus, the curve of pressure loss in the flow string against production will pass through a distinct minimum. Figure 6 gives the results of a series of tests made on Humble Smith A-2 in the Yates field, showing the effect of production rate upon the pressure losses in both the sand and flow string. The difference between rock pressure and the sum of the pressure losses in the sand and flow string will give the well head pressure. Figure 7 shows a typical curve of well head pressures plotted against production rate. It becomes apparent that the production rate at zero well head pressure is the true value of the sustained production rate under open flow. This value should not be expected to check the value given by the open flow test.

The Yates field engineering committee has devoted a great deal of time and energy to the study of the problem of the determination of potential production without open flow. In their report to the Yates pool advisory committee of December 10, 1929, they recommended that data on well head pressures be taken at various production rates, the results plotted, and the data extrapolated to the point of zero well head pressure by means of a straight line through the points taken at the higher rates of flow. The production corresponding to zero well head pressure is called the point of "absolute open flow." Figure 7 gives an example of this procedure. Although this method has not been adopted in the Yates pool, it is far superior to the present practice of taking the periodical open flow test. Unquestionably, the data are more accurate than that given by the open flow test. However, it can be shown that the true curve

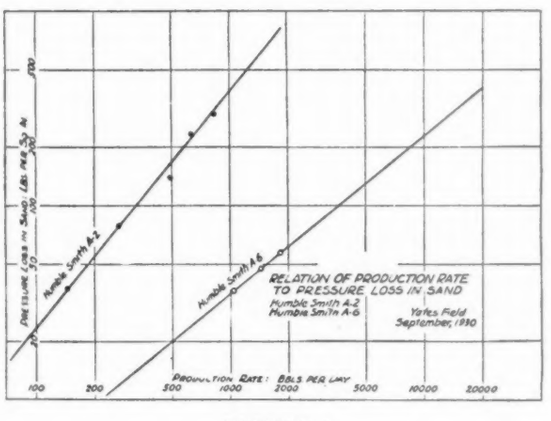

FIGURE 8

of well head pressures is not a straight line. In some instances the curvature is so marked that serious error may be introduced by the use of a straight line to extrapolate the data. Furthermore, if consistent results are to be obtained, accurate data must be taken over considerable periods of time at high rates of flow. Thus, the dangers of water encroachment are present even in this improved procedure.

If, in the determination of the relationship between well head pressure and production rates, data on bottom hole pressure are made available, the pressure losses in both the sand and flow string may be plotted, and each of these curves may be extrapolated more accurately than the curve of well head

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A derrick was moved over the hole, and it was bailed out. Mr. Teddlie then authorized us to treat it by the Morris Well Cleaning Process. *In the first* 13 *hours after treatment, the well made* 60 *barrels of pipe line oil. It has produced* 50 *barrels of pipe line oil per day since treatment.*

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IMPROVEMENT IN PRODUCTION PRACTICE

pressures. From these plots, the well head pressure curve can be extrapolated with a greater degree of precision than is possible by the use of the method proposed by the Yates field engineering committee. Furthermore, by the use of this method, the data taken at the smaller rates of flow, which the Yates field engineering committee was forced to discard, can be used in estimating the curve of well head pressures. Hence, it is unnecessary to take data at excessively high rates of flow. Thus, it is believed that this proposed method will be of value in determining potential productions more accurately, and with less danger of water encroachment than is possible by the use of either the open flow test or the method of the Yates field engineering committee.

Based on Pressure Losses

The previous methods of determining potential productions have all been based on the combined pressure losses in both the sand and the flow string: they have had as their objective the determination of the true production rate which may be sustained under conditions of unrestricted flow. Especially, in the case of larger wells, it is obvious that the nature of the flow string affects very seriously the potential production. Thus, if such a method is employed, wells which, if finished with similar flow strings would have identical production characteristics, may show widely different potential productions because of differences in size of the flow strings with which they are equipped. Hence, those operators who tube their wells, in the interest of gas conservation and production efficiency, find that their potentials are greatly reduced and that, in consequence, they must suffer a serious cut in their allowable productions. The injustice of any system of proration which penalizes the operator for the employment of efficient production practices must be apparent to all concerned. The true size of a well should be dependent upon the characteristics of its producing sand, and not upon the type of flow string through which the oil is removed from the reservoir. It seems, therefore, that a more equitable system of proration would be based only upon the pressure losses in the sand, disregarding entirely the flow string and the pressure losses therein.

The application of such a method would require data upon the variation of bottom hole pressure with production rate. Several systems for the application of these data to the problem of proration could be developed, three of which will be considered here. The required information has been obtained on two wells in the Yates field, Humble-Smith A-2 and Humble-Smith A-6. These data are presented graphically in Figure 8, which shows the relationship between pressure loss in the sand and production rate. In order to give concrete examples of the application of the proposed methods, assume it is desired to restrict the production of an imaginary field which contains only two wells whose production characteristics are identical with those of Smith A-2 and A-6. Suppose that it is desired to withdraw 500 barrels per day from this field, this production to be prorated equitably between the two producing wells on the basis of potential alone. Although in these examples two wells only are considered, the method can be easily extended to include any number of wells.

For comparison with the other methods, the allowable productions are assigned to these wells on the basis of an open flow test. Under such tests, Smith A-2 showed a potential production of 1546 barrels per day, while the potential of A-6 was found to be 9090 barrels per day. The potential of the field is therefore 10,536 barrels; hence each well will be allowed 4.70 per cent of its potential. Thus, A-2 may produce 73 barrels per day, and A-6 may produce 427 barrels per day.

The first system of proration proposed for the elimination of the open flow test is one in which potential production would be defined, for the purpose of proration, as that production at which the bottom hole pressure had fallen to a certain value. This value may be taken as the average pressure drop in a certain standard flow string when carrying a quantity of oil and gas, approximately equal to the average open flow production of the field. Suppose this value had been set at 400 pounds. The rock pressure on Smith A-2 is taken to be 700 pounds. Hence the pressure drop in the sand corresponding to the "potential production" is $700 - 400 = 300$. By referring to the curve, Figure 8, the "potential" of A-2 is 820 barrels per day. Similarly, the rock pressure on A-6 is 670 pounds, and the pressure loss in the sand when the bottom hole pressure had fallen to 400 pounds would be $670 - 400 = 270$. Thus, the potential of A-6 is seen to be 12,500 barrels. A simple calculation will show that if the field is to produce 500 barrels per day, each well must be restricted to a production which is 3.75 per cent of its potential. A-2, therefore, may produce 31 barrels while A-6 may produce 469 barrels. This method is perhaps the simplest of all those proposed to eliminate the open flow test. However, it is believed that modifications of this method may be made which will distribute the allowable production more equitably. For instance, the value of bottom hole pressure used to define potential production could be set at various values for wells of different capacities, in order that the true open flow potential of a well might be more nearly approximated.

A second system, and one which would probably give a more just distribution of the oil in the reservoir, would set a certain allowable pressure drop in the sand at such a value that when all the wells in the field were producing with this allowable pressure drop, the proration requirements on the field would be met. The exact value of this pressure loss must be determined by trial and error from the data on the individual wells. To illustrate this method, let it be assumed that Smith A-2 and A-6 are to be prorated so that their combined production is 500 barrels per day. By successive approximations, it is found that the allowable pressure drop is 17.2 pounds per square inch, that the corresponding production of A-2 is 78 barrels, while that of A-6 is 422 barrels. The great advantage of this system is to be seen in the case of offset wells. If the pressure drop from the property line to the base of the well is the same in each case, the danger of a well draining oil from the adjoining property is minimized. Thus, this system should provide a very satisfactory method of assigning equitable allowable productions to the various wells in a given field.

A system could be developed to encourage operators to employ such means as they could to reduce high gas-oil ratios. Such a system would restrict the production of high gas-oil ratio wells to a greater extent than in the case of the wells producing with low gas-oil ratios.

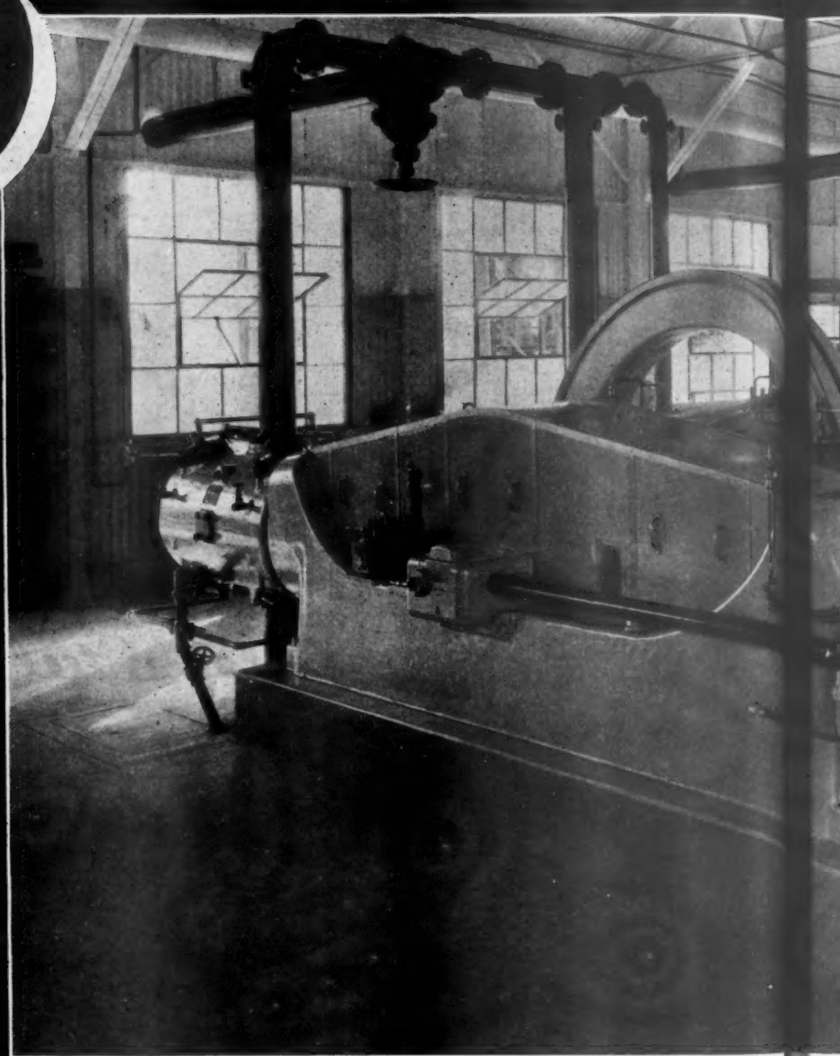
The following table presents a summary of the application of three methods to prorate the hypothetical field under consideration:

	A-2	A-6
Open flow test	73	427
Definition of potential as production at which bottom hole pressure reaches certain value	31	469
Assignment of allowable pressure loss in sand	78	422

The assignment of allowable pressure losses in the sand would probably be the most satisfactory of all the methods considered. The further development of this method to restrict further the production of oil with excessive quantities of gas would be most desirable, inasmuch as it would fur-

ROTARY CHAIN

36 STEADY



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cycle gas engine driven compressor units after they had been in service for about four years in Plant No. 13 of the Sinclair Oil and Gas Company, located in the Seminole field. (Some of these engines have recently been moved to other plants.)

MER CORPORATION, MT. VERNON, OHIO., GROVE CITY, PA.

IMPROVEMENT IN PRODUCTION PRACTICE

nish an incentive to the operators in a given field to use all available means to conserve the formation gas and thus tend to eliminate one of the most vicious of the wasteful production practices which are still prevalent in some fields.

It is hoped that when the inaccuracies and harmful effects of the present open flow tests are realized by the operators in fields wherein production is curtailed, a more rational system of prorating production will be adopted. When the open flow test becomes obsolete, a great step in the direction of conservation of our petroleum resources will have been taken.

Adaptation of Gas Lift to Wells of Small Size

By S. F. SHAW
The Carter Oil Company, Tulsa, Oklahoma

THE use of continuous gas-lift reaches an economic limit in small wells, beyond which it is not advantageous to go, by reason of excessive consumption of gas per barrel of oil. This economic limit is reached earlier in the life of wells as the depth increases. It has been found under certain favorable conditions that continuous flow can be replaced by intermittent flow and lifting costs held at a low figure.

Wells with depth of about 4000 feet require an output of approximately 8500 cubic feet of gas per barrel of oil when lifting 200 barrels per day of oil free of water on continuous flow, and an output of 16,000 to 18,000 cubic feet per barrel when producing 100 barrels per day. The cost for gas at 3½ cents per 1000 cubic feet is then 30 cents to 60 cents per barrel. These costs are such that it is desirable to make a change in the manner of operating.

Intermittent flowing has been employed for lifting as much as 3000 barrels per day from a depth of 4000 feet, but it is questionable whether this is the best method. When the well has declined to 200 barrels, there is no question as to the desirability of making the change. The general practice in wells making 200 barrels per day is to admit gas periodically to the same gas line in the well that was employed for continuous flow. Input volumes are reduced to about 4000 cubic feet per barrel under these conditions. When the well has declined to 110 barrels or less, it has been found desirable to run two strings of tubing one within the other, the outer string being fitted with a chamber at the bottom with as large a diameter as the casing will admit and provided with a standing valve at the lower end. The oil is flowed intermittently through the inner tubing. With two tubing strings the input factor can vary from 1500 to 3000 cubic feet per barrel of oil, resulting in a lifting cost for compressed gas of 5¼ cents to nine cents per barrel.

Admission of gas is controlled by intermitting mechanism, either of the automatic or of the timed interval type.

Wells of 600 feet or more in depth are being successfully flowed intermittently in California. In Seminole at depths of 4000 to 4500 feet several wells have been intermittently flowed for periods of a year or more with most encouraging results. A well at Cromwell, with depth of 3300 feet making 20 barrels per day, is now being successfully produced by intermittent flow. Other wells near Madison, Kansas, at depth of 2400 feet; and a considerable number of wells near Chelsea, Oklahoma, with depths of 400 feet are being produced by intermittent flowing employing the automatic type of mechanism which is controlled by the height of the fluid level. These shallow wells of 400 feet depth and producing one-half to two barrels per day are probably consuming from 500 to 700 feet per barrel lifted, at a lifting cost for gas between two cents and 10 cents per barrel of oil.

[8] L. A. Ogden, The Empire Companies, Bartlesville, Oklahoma.

Ogden[8] reported as follows with reference to intermittent gas-lift in the Seminole field, Oklahoma.

"Intermitting came into general use in the Seminole field in the early part of 1928. Probably the primary purpose back of it was lack of compressor capacity to take care of all the wells without enlarging the 'air-lift-plants.' It was found that most wells responded favorably to this type of flowing. Below are listed some of the main advantages of intermitting over the straight flow method.

"1. Usually a sustained increase in production results over the straight flow method.

"2. The gas-oil ratio is decreased due to the oil coming out more like a piston with the volume of injected gas not breaking through.

"3. The greater length of time a well can be flowed by this method results in keeping compressors in operation, and gives a combination 'air-lift' and gasoline plant a chance to retire its investment.

"4. A saving in compressor capacity is made (e. g.). Two wells on the straight flow require 1,400,000 cubic feet injection per day for each well. It is very possible that the two wells could be flowed with 1,600,000 cubic feet per day making a saving of 1,200,000 cubic feet per day. This is very advantageous where electrical driven compressors are used."

The Use of Meters to Gage Fluid Production of a Well

By H. A. BRETT
Union Oil Company of California, Santa Fe Springs, California

A NEW development in lease operations which has taken place during the past year is the use of meters which measure the flow at the well discharging directly into stock tanks, thus eliminating the necessity for gage tanks.

When selecting a meter for a given well, it is important that sufficient capacity be provided to handle the maximum production from the well in the event that the well produces by heads. A gas eliminator, which is in reality a miniature gas trap, should be set immediately ahead of the meter to insure the delivery of gas-free fluid to the meter; otherwise, the recorded flow will be in error. A by-pass around the meter should be provided so that repairs or replacements may be made without shutting down the well, and a pop valve should also be installed ahead of the meter as a protection against excessive pressure on the lead line and trap in the event that the meter becomes inoperative for any reason or a discharge valve closes in the gathering system.

The chief advantages of the meter installation are the elimination of the first cost and maintenance of gage tanks without eliminating individual well records, and all the production from one lease is pooled and held in a few tanks located at some convenient point. The number and size of these stock tanks will, of course, depend on the amount of production to be handled and on the shipping facilities. Monetary savings will be directly proportional to the number of wells; the more wells, the greater the saving. Other advantages are the ease of reporting production as the meters are graduated to read in barrels directly; and, because of the pressure of sampling devices with which these meters are equipped, it is possible to obtain a fairly representative lead line sample as a few drops are secured at each pulsation of the meter.

These meters are obtainable, either with or without an automatic device, to compensate for temperature changes, and are known as thermometric or volumetric meters, respectively. Volumetric meters, when adjusted to agree with the gage tank strapping, have proven entirely satisfactory.

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Because of its neat, silvery appearance, aluminum paint makes bulk plants and filling stations look better. Stations can be kept clean because finger marks and stains can be readily washed.

Aluminum Company of America does not sell paint. But aluminum paint made with satisfactory vehicles and Alcoa Albron Powder may be purchased from most reputable paint manufacturers, jobbers and dealers. Be sure the pigment portion is Alcoa Albron and is so designated.

Let us send you the booklet, "Aluminum Paint, the Coat of Metal Protection". Address ALUMINUM COMPANY *of* AMERICA; 2419 Oliver Building, PITTSBURGH, PENNSYLVANIA.

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Tests indicate that, in many of these soils, Alcoa Aluminum Foil will give real protection to buried pipe, even where soil stress is severe; that Alcoa Aluminum Foil will stay on lines that "creep".

Alcoa Aluminum Foil can be applied to pipe without difficulty. However, care should be taken to keep the foil smooth and to use sufficient adhesive to avoid contact between the pipe and foil. Stick the foil tightly.

Our nearest office can supply you with full detail on the application of Alcoa Aluminum Foil. They will also tell you about the results of tests on pipe lines, and tests on tanks and tank cars, where Alcoa Aluminum Foil has greatly reduced evaporation losses. Address ALUMINUM COMPANY *of* AMERICA; 2419 Oliver Building, PITTSBURGH, PENNSYLVANIA.

ALCOA ALUMINUM

ROLLED INTO FOIL

Lessened Oil Demand Makes Curtailment Imperative

(*Continued from page 25G*)

per cent of the total supply of all oils in this country. The trend of imports and the ratio of imports to total supply are shown in Table 6.

An analysis of imports, subdivided into crude petroleum, gasoline, and other petroleum products, is presented in Table 7. During the past three years imports of crude petroleum have declined, but imports of gasoline and other products (mainly fuel oil) have increased. This is particularly true of the first nine months of this year as compared with the corresponding period of last year. This change has been brought about chiefly through the expansion of refinery operations in and near Venezuela. The marked recent increase in the imports of gasoline has been a factor in the general oversupply of gasoline, though a less important one than refinery expansion in this country. Imports of gasoline in the first nine months of 1930 represented 3.8 per cent of our total supply of motor fuel during this period; in September, the proportion was 4.0 per cent.

While imports of oil into the United States are substantial, they are less than the exports of oil from the United States, and have been for a long period. See Table 8. This country, therefore, is a net exporter of oil. During the first nine months of 1930, 10 per cent of our total supply of oil was imported, while 15 per cent was exported.

In respect to the adjustment of supply to demand over the six months under consideration in this report, it would be helpful if imports of gasoline were curtailed, but a restriction of importations of heavy crude and fuel oil might lead to a shortage of fuel oil in the coastal regions and would impair the gasoline situation if equivalent quantities of fuel oil were obtained by refining higher-grade crudes.

The oils imported into the United States are in general lower-cost than domestic oils. The primary cause for this difference is that foreign oil fields more largely employ the principles of unit operation with their attendant efficiencies than do American oil fields. One remedy for this condition would be greater progress toward unit operation in this country.

TABLE 5.—SUGGESTED COURSE OF GASOLINE AND CRUDE OIL STOCKS FROM AUGUST 1930 TO MARCH 1931 TO INSURE GASOLINE INVENTORIES OF 45 MILLION BARRELS ON MARCH 31, 1931, AND NO INCREASE IN CRUDE OIL STOCKS

(In millions of barrels)

		Gasoline	Crude Oil
1930	September	38.3[1]	521[1]
	October	37.0	521
	November	38.2	521
	December	40.3	521
1931	January	43.5	521
	February	44.6	521
	March	45.0	521

[1]Actual.

TABLE 6.—RELATION OF IMPORTS TO TOTAL SUPPLY OF ALL OILS

Data From U. S. Bureau of Mines

(In thousands of barrels per day)

	Imports	Total supply	Per cent imported
1925	214	2,384	9.0%
1926	223	2,429	9.2%
1927	197	2,778	7.1%
1928	250	2,837	8.8%
1929	295	3,209	9.3%
1929 (9 months)	304	3,235	9.4%
1930 (9 months)	298	2,970	10.0%

TABLE 7.—IMPORTS OF CRUDE PETROLEUM AND PETROLEUM PRODUCTS INTO THE UNITED STATES, 1925—1930

Data From U. S. Bureau of Mines

(In thousands of barrels per day)

	Crude petroleum	Gasoline	Other petroleum products	Total imports
1925	169	10	35	214
1926	165	15	42	223
1927	160	14	23	197
1928	218	11	21	250
1929	216	24	57	297
1929 (1st 9 months)	230	22	52	304
1930 (1st 9 months)	175	49	74	298
1930 August	163	59	81	303
1930 September	194	51	69	314

TABLE 8.—COMPARISON OF IMPORTS AND EXPORTS OF CRUDE PETROLEUM AND PETROLEUM PRODUCTS, 1925—1930

Data From U. S. Bureau of Mines

(In thousands of barrels per day)

	Imports	Exports	Net exports
1925	214	311	97
1926	223	360	137
1927	197	386	189
1928	250	423	173
1929	297	447	150
1929 (9 months)	304	435	131
1930 (9 months)	298	447	149
1930 August	303	483	180
1930 September	314	357	43

Limiting Production Is Not Restraint of Trade

(*Continued from page 25B*)

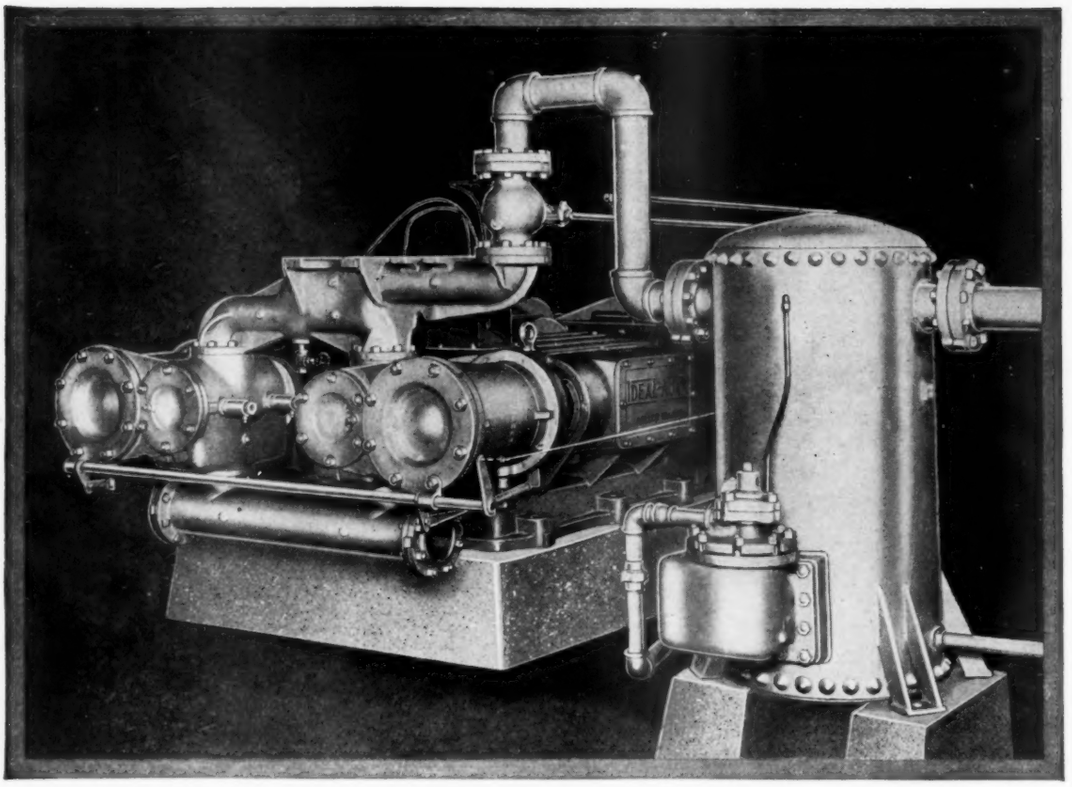
so far as practicable, the needless waste of an essential national resource. If such an agreement were made in good faith for the purpose of maintaining a stable condition and for the purpose of overcoming the business disasters and depressions which come from periods of excessive production, and is in good faith confined to those purposes, a very persuasive argument is offered the court for holding that the effect upon prices charged in transactions in interstate commerce is indirect and remote, and that the agreement does not fall within the prohibitions of the anti-trust laws.

Agreement Possible

"This is a frank presentation of the position that an agreement to limit production in this industry, confronted by a critical emergency, may under proper conditions be justified under the anti-trust laws.

"It is true that there is no decision by its terms sustaining or denying the legality of such a plan of curtailment where the circumstances are such as I have assumed in this discussion. Every case involving limitation of production has always included other elements such as blacklisting or price-fixing or allocation of territory. No cases have been presented to the court which clearly and definitely presents the issue we have raised here.

"There may be novelty in this suggestion, because of the natural fears of certain individual companies in this industry due to unfortunate experiences with the government. Any such plan may be regarded as too daring. You may feel that the possibility of proceedings by the government, with its attendant adverse publicity, is too great a risk. It seems to me, however, that in these times industry is confronted with a test of its ability to regulate itself. That regulation must be not only in its own interest but in the interest of the public. To accomplish this purpose not only requires intelligence in determining what these interests are but also the courage to put that plan if need be to the test of court decision. This does not involve the question of a particular company or a group of companies doing something that may be an evasion of the law. This is a question which involves the stability of an entire industry. And in such a situation it would seem that an industry might with propriety claim the privilege of going to its government to determine what can be done to preserve that industry. I know that it may seem less difficult for one who is not directly concerned to suggest this view but I speak with no hesitancy on this subject. The views I now hold as to the propriety of an industry going to its government in this way are



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6627 ft.
Actual drilling time
34 Days

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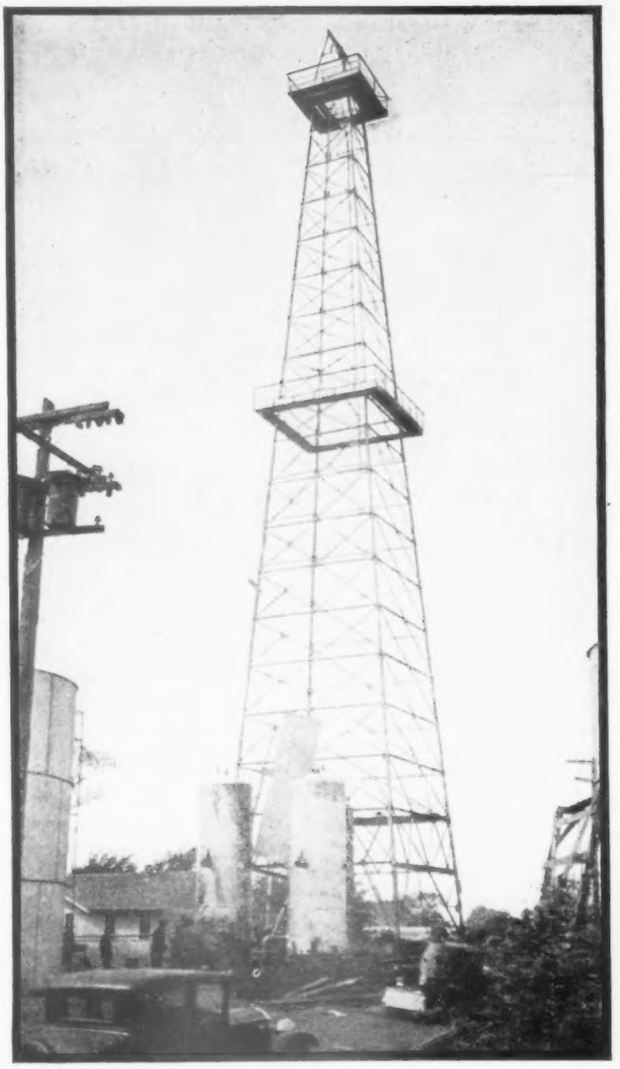
Started Rigging Up	July 24th
Drilling Completed	Sept. 19th
Total Pay Roll Time	57 Days
Total time rigging up, waiting on cement coring and bailing	23 Days
ACTUAL DRILLING TIME	34 Days



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ROLLER BEARING
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the same that I held as a public official charged with a definite responsibility in the enforcement of these laws.

Not Based on Narrow View

"The administration of the anti-trust laws, which represent an economic policy, should not be based on a narrow view but on a broad conception that regards the purpose which the law was designed to serve, and the evils it was meant to overcome. And that purpose was not to shackle industry in dealing with a problem that vitally concerns not only the industry but the welfare of the country.

Arbitration by Industry

"Let me illustrate what I mean. When I was in the government, the motion picture people came to the department. They presented this situation: they said that prior to 1922 they had been faced with thousands of suits involving questions under their exhibition contracts. They pointed out that the speedy determination of these suits was essential because the value of motion picture films decreased rapidly with age. Faced with this situation, producers and distributors distributing annually about 98 per cent of the motion picture films distributed in the United States, prepared a standard form of exhibition contract containing a clause requiring the compulsory arbitration of all disputes arising under the contract. Producers agreed that they would use only this form of contract. They adopted this contract with the knowledge that the legality of the agreement had never been specifically passed upon by the courts. They faced an emergency, just as you now face an emergency, in which they felt that a determination of their rights was essential. They asked what the attitude of the Department of Justice would be. They were told that it was a case in which the department could not give its sanction but that it was a question that should be passed upon by the courts. The leaders of that industry stated that while they felt that the agreement was legal, they welcomed a case which would definitely outline what could actually be done by their industry under the law. Accordingly, in 1928, proceedings in equity were commenced by the government. The case has already been argued before the Supreme Court and is now awaiting final determination. It may be that the legal position taken by the motion picture industry was wrong. Nevertheless, the result of the suit will determine once and for all whether or not their particular method of self-regulation is legal or illegal. This indicates a way that can be followed by any other industry in the country. Such decisions of the Supreme Court will serve the purpose of clarifying for industry the law under which it must operate.

"I understand that there may be some hesitation on the part of this industry following such a course because of its experiences in relation to a plan of curtailment embodied in resolution of a committee of your institute in March of last year. This agreement was submitted to the Federal Oil Conservation Board for the purpose of securing its approval. The chairman of that board, the Secretary of the Interior, submitted to the Attorney General the question as to whether or not the board had authority to approve a proposed plan and agreement for curtailment of production of crude oil and the Attorney General replied that the board had no authority to grant to any persons immunity from the operation of acts of congress prohibiting agreements in restraint of interstate commerce and that no action taken by the board could have the effect of relieving parties to such an agreement from the operation of the anti-trust laws. As I read his opinion, that was all that the Attorney General decided. Certainly the conservation board created by executive order of the president for the purpose of studying the problem of conservation had no authority to grant immunity under the anti-trust laws. The president himself has no such power. I simply wish to point out the fact that it does not appear from the opinion of the Attorney General that he passed upon or undertook to pass upon, the question that we have discussed here. As I understand it there is nothing in that opinion which would preclude your industry from submitting this question to the Department of Justice. Of course, the industry would submit its plan to the Attorney General, not for the purpose of obtaining immunity, but for the purpose of presenting the facts to the Department of Justice and if necessary joining with it in stating a legal issue for submission to the judgment of the court and securing a decision as to what the industry could, or could not do in these particular circumstances under the law. It might well be that a statement to the authorities of the circumstances surrounding this industry and a fair and complete presentation of all the factors would convince them that such an agreement would restore normal and healthy competition and does not constitute a violation of the Sherman Law.

"It would be unfair to the Department of Justice and to the Attorney General to assume that they have closed the door in the face of any industry that desires within the law to have its rights determined. I do not undertake to anticipate the decision of the Attorney General. My only point is to clear up in the minds of the leaders of this industry what the Attorney General by his opinion of March, 1929, in relation to the Federal Oil Conservation Board decided, or undertook to decide. He did not decide that such an agreement as is discussed here was in and of itself illegal and it would be unfortunate if such a misunderstanding of the Attorney General's opinion were continued to the extent of precluding your industry working out directly with the government the mutual problem of oil conservation.

Growth of Consolidations

"In 1890 and in years immediately following, proceedings under the Sherman Law were directed toward specific combinations and monopolies which were the result of agreements and understandings. This method of combination has been abandoned and during the last 20 years we have seen corporate enterprise attain its growth through consolidation and merger. Some may say that this growth has been reached in spite of the Sherman Law and in response to the need of mass production to meet the demands of national markets. The existence of the Sherman Law has not prevented that growth, but on the contrary, the Supreme Court has held that the law does not make the mere size of a corporation, however impressive, nor the existence of unexerted power on its part, an offense when unaccompanied by unlawful conduct in the exercise of that power. It is only when these consolidations either have the intent to monopolize or monopoly follows as a direct and necessary cnsequence of their organization and practices that they meet the condemnation of the law. Sherman Law is resilient enough to be responsive to changing economic and social conditions. It should not be the purpose of that law to deprive men of the right to exercise intelligence in the conduct of their business. If that flexibility does not exist and as a result the stability of your industry as well as that of other industries, is threatened, then it will be time to consider the question of modifying or abandoning the theory upon which the Sherman Law is based. But first, it would seem only common sense that this industry be certain that under existing law it cannot carry out those measures it believes necessary for its own preservation and its service to the public."

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The harder the service, the more valuable are Timken advantages.

Drilling is a job that calls for tremendous stamina in every part of the drilling equipment, and especially in the power units.

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Many different conditions must be met and mastered by drilling rig bearings.

Friction elimination is a comparatively easy matter, but when it comes to carrying radial, thrust and combined loads, holding shafts in alignment, keeping gears meshing smoothly and silently, defeating torque and shock—all of which must be done in the interests of continuous, attention-free service—it is a different story.

It is then that the exclusive combination of Timken tapered construction, Timken positively aligned rolls and Timken-made steel shows its real ability to comply with all modern anti-friction requirements in all types of oil field machinery—wherever wheels and shafts turn. The Timken Roller Bearing Company, Canton, Ohio.

TIMKEN *Tapered Roller* **BEARINGS**

Symposium of Subjects Before A. P. I.

(*Continued from page 25D*)

under the auspices of the American Petroleum Institute, would make such expansion popular. Unit operation is gradually building its own by-laws of procedure in matters of equality of opportunity to profit by the collateral investments in royalty leases, but those who have the trusteeship in such operations now being conducted should lay the foundation stones of the future traditions of administration and interpretation in the broadest spirit of fair play.

A **"REPORT on the Work of the Bureau of Standards Underground Corrosion Section During 1930,"** presented by K. H. Logan of the Bureau of Standards, underground corrosion section, with the approval of the director of the ureau of Standards of the United States Department of Commerce, estimates the number of companies taking part in the tests or furnishing materials for the tests for the bureau each year at 100. Each of these companies cooperates with the department in order to promote standardization of materials and methods. The American Petroleum Institute furnishes a research associate to the department for conducting tests with the various materials of the companies and reports of these tests are sent to the companies supplying materials at the end of each month. These tests are made under all conditions with all kinds of pipe and are considered from an engineering standpoint to bring out the relations between soil properties, coating characteristics, and pipe line corrosion.

The American Gas Association is conducting an experiment on one of its longest gas lines that involves practically every condition favorable for the study of protective coatings. A rough soil map of the line has been made so that this phase of the expirement may be thoroughly covered in the tests to be made. A report of the results of this study show the results obtained from the various kinds of materials when subjected to certain conditions.

The Bureau of Standard's project contains reports of the corrosion studies and studies of protective coatings as conducted from the laboratory standpoint while the field work conducted gives details of a study of pipe line corrosion in the eastern part of the United States, and an analysis of the relation of pipe line currents and electrical resistivity of earth to corrosion. The future work of the department as planned for the coming year calls for two classes of laboratory work: the correlation of soil properties with corrosion and the examination of bituminous materials.

"PIPE PROTECTION—Why and How," presented by W. H. T. Thornhill, secretary-treasurer of the Underground Pipe Protection Institute, makes numerous recommendations and gives various examples of companies methods for the care and protection of pipe against corrosion. The use of protective coatings on pipe lines against soil corrosion has proven a waste of money. No matter how thoroughly protected pipe will last only a certain time even in the most favorable of sub-soil conditions and will eventually deteriorate to the extent that it must be entirely replaced. Protective coatings are bought in the belief that the additional investment will be justified by increased life of the pipe. This includes longer freedom from leaks caused from localized pittings and lower operating and maintenance costs.

The method of estimating the investment in the protection of these lines must be figured from the initial laying of the pipe and not from the time that the pipe would normally start deteriorating without protection. When viewed in this light, the investment in coating is the cheapest insurance that can be secured against loss of revenue and increased operating costs. Cost of applying a good pipe coating will range from about two per cent in the case of cold applications, to possibly 10 per cent in the case of some wrapped hot applications.

Occasionally, the thought is advanced that pipe coating materials should be purchased on a specification basis but long experience of manufacturers with their own products has convinced them that this is an unsatisfactory method of purchasing the coatings. There is no satisfactory laboratory method of determining whether any compound, which passes all tests, will subsequently suffer chemical disintegration due to age and thereby lose its effectiveness. The protection of pipe must, therefore, depend almost solely upon proper application of the coating materials. The pipe should have a primary application of coating before leaving the factory so the pipe will be clean and when the coating is applied in the field the pipe should be as clean as possible then.

"SOIL Corrosion—Causes and Predetermination," presented by Joseph F. Putnam states that soil corrosion, being an electrolytic phenomenon, may be evaluated in terms of electrical units. Simple ammeter voltmeter test has been devised which may be used to predetermine the corrosivity of oil in which iron is buried. More work is necessary in order to correlate moisture content with soil textures and rainfall.

Except in extreme cases where the electrical resistance of the soil is very low and steady, long line currents of considerable magnitude may be set up which materially affect corrosion, the general method gives a rather close correlation to the corrosion experience on varied pipes. Long line currents mean those currents of electricity which flow for several feet before leaking off into the soil. It has been impossible so far to devise any method by which the direction or amount of these currents may be predetermined.

V. **L. MARTIN, Prairie Oil & Gas Company,** presents a "Report of Chairman of Standing Committee on Disposal of Production Wastes" which explains that the work of the committee has been more to show that the so-called wastes are not wastes and to show how these materials may be utilized economically. A survey of several of the Mid-Continent producing companies shows that for each barrel of oil produced more than two cents was spent in attempting to prevent pollution or settling claims of damage. Each state has statutes which prevent the pollution of its streams and every landowner has legal recourse to protect his property.

The suggested remedies as specified in this paper show that since the two main production waste products are oil and water that with ordinary precautions, proper equipment, competent inspection and supervision, there can be no excuse for any oil escaping from our properties. A large part of emulsified oil is profitably recoverable today. The question of salt water waste contributes the greatest problem where there is no natural outlet to the gulf or sea where the process involves only the skimming of oil from the water before it is allowed to run off into the natural reservoirs. One practice for the disposal of the salt water has been to introduce it into non-productive sands by community disposal systems but this has proved unsatisfactory since the high pressures may by-pass these waters into fresh water channels or into producing sands. The only method at present that seems practical is to dilute the water so that the potential damage to water supplies will be reduced.

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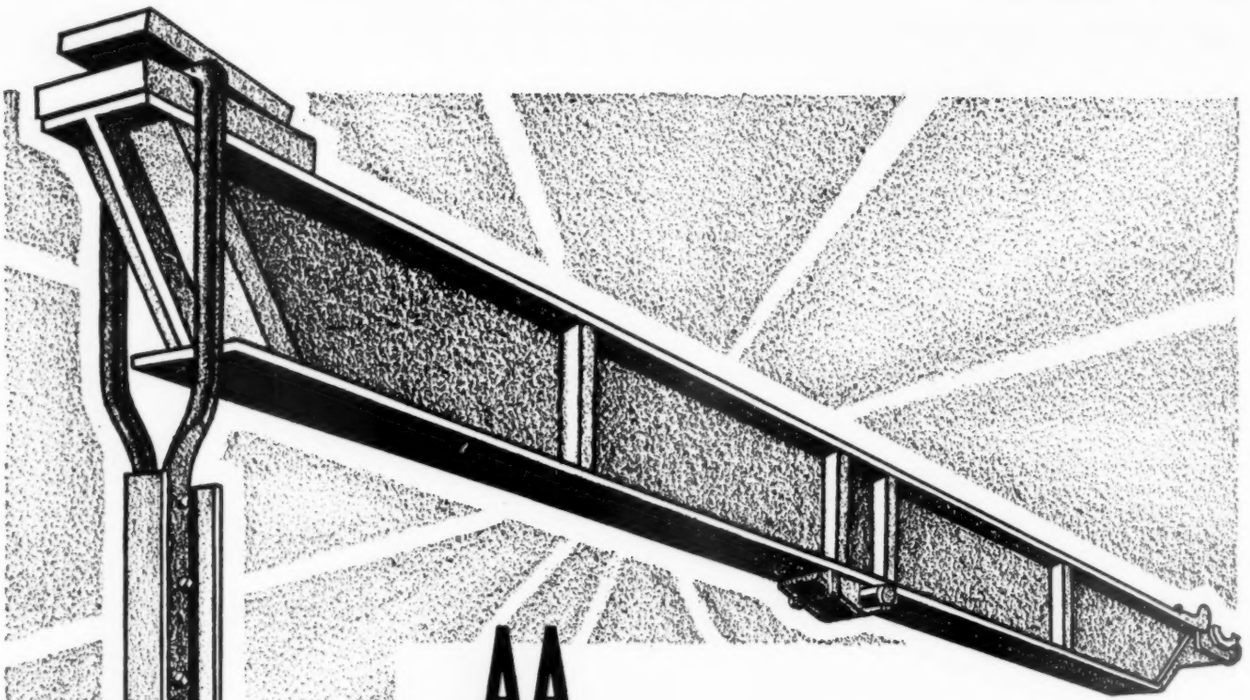

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DALLAS, TEXAS WICHITA, KANSAS CASPER, WYO.

SHREVEPORT, LA. HOUSTON, TEXAS

Stocks in All Principal Fields

Markets--Production--Crude Prices

H. J. STRUTH, *Staff Economist, Houston, Texas*

More Drastic Curtailment Follows Lower Prices

FURTHER drastic curtailment of crude production was in evidence last week, undoubtedly as a direct result of the recent slash in crude prices. The production curve shows a further recession to a new low figure of 2,297,250 barrels, a decline for the week of 65,800 barrels a day. As a result of last week's decline, the status of current supply and demand indicates the probable withdrawal of crude from stocks to the extent of nearly 240,000 barrels daily. This rate of withdrawal will therefore mean a decrease in crude stocks of more than 7,000,000 barrels during the present month. It is possible, however, that extended curtailment of refinery crude runs will exert an opposing influence to such a decrease in stocks, and somewhat temper the indicated current demand figures.

It is significant, however, to call attention to the fact that the difference between indicated crude requirements and actual daily production during September showed a possible withdrawal from crude stocks of about 4,980,000 barrels for that month. Receipt of official Bureau of Mines figures for September supported the earlier estimate to the extent that actual withdrawals of crude from storage amounted to 4,808,000 barrels during that month. In this connection, it should be realized that while refinery runs are being reduced, crude production is also being reduced, to the extent that the actual difference between supply and demand has been very nearly maintained on the same ratio.

It will be noted on the accompanying chart of refinery still runs that the curve of actual runs is showing marked results in the direction of curtailment. American Petroleum Institute figures of refinery runs, converted to a Bureau of Mines basis, have shown a steady rate of decline since the week ending September 27. On that date, refinery runs were equivalent to a daily average throughput of 2,576,000 barrels. During the week ending November 1, runs aggregated approximately 2,349,000 barrels daily, or a net decline during the five-week period of 227,000 barrels daily. These figures show that the refining branch of the industry is finally giving serious attention to the need for drastic curtailment. That further curtailment will be necessary is indicated by the report just issued by the Federal Oil Conservation Board's Volunteer Committee on Economics; the full context of which appears in this issue, and which figured prominently in the opening session of the A. P. I. in Chicago.

Mid-Continent Refined Market Steady; Needs Crude Stabilization

OKLAHOMA natural gasolines were being quoted at .04½ during the past week, one-fourth of a cent higher than the average quotation for the same grades the week before. The market was steady with no noticeable change but refiners feel that a more stabilized crude oil market will materially assist in holding the refined products market steady during the remainder of November. Following are quotations for the week ending November 8, 1930:

U. S. Motor 58-60°, 437 E. P. in Oklahoma, .04½ to .05¼
U. S. Motor 58-60°, 437 E. P. in Texas, .04⅜ to .04¾
U. S. Motor 58-60°, 437 E. P. in Kansas, .04¾ to .05½
Naphtha, 50-52°, 450 E. P., 0.4¾ to .05
Gasolines, 56-58°, 450 E. P., .04¼ to .05
Fuel oil, 24-26°, in Oklahoma, .60 to .65
Fuel oil, 24-26°, in Texas, .50 to .55
Fuel oil, 18-22°, Oklahoma, .45 to .50
Fuel oil, 18-22°, Texas, .37½ to .42½
Fuel oil, 18-22°, Kansas, .70 to .75.

Runs to storage and withdrawals were approximately even. A concerted effort is being made to increase pipe line takings in the Oklahoma City pool to relieve the field storage situation. It has been estimated that stored oil and that due underproduced wells in the pool will total approximately 3,000,000 barrels. One or two major buyers, who have been withdrawing from storage, have signified intention to increase their runs in the Oklahoma City pool which means that, with crude oil demand on the downgrade, these companies will start running a like amount to storage.

Texas Crude Nominations Will Lower Allowable Output

A PRELIMINARY check of crude nominations for Texas, indicated by returned questionnaires received from pipe line companies by the Central Proration Committee, shows that it will be necessary to effect a further reduction in allowable output in the near future. While all purchasing companies have not as yet made complete returns on their crude requirements, it is apparent that the state figure will probably not exceed 710,000 barrels daily, as compared with the maximum allowable figure of 775,000 barrels, as first ordered by the Texas Railroad Commission. Subsequent revisions have necessitated revising this figure to 765,000 barrels and until recently it was proposed to further reduce this figure to 743,000 barrels. As the situation appears now, it is probable that the next proration order issued by the Texas Railroad Commission will call for a maximum production in Texas of 710,000 barrels.

Upon receipt of outstanding questionnaires, the Central Proration Committee is expected to issue an official report showing Texas crude nominations by major producing districts of the state, which will be submitted to the Texas Railroad Commission for guidance in determining state production limits. Lesser demand for North and Central West Texas crude, as indicated by the returns from purchasing companies, is expected to work somewhat of a hardship upon operators there. Current output of these two districts is about 111,500 barrels daily, involving production from about 23,000 wells. Since the present well average is about 4.85 barrels, it is readily seen that any further reduction in allowable production there will seriously affect operations.

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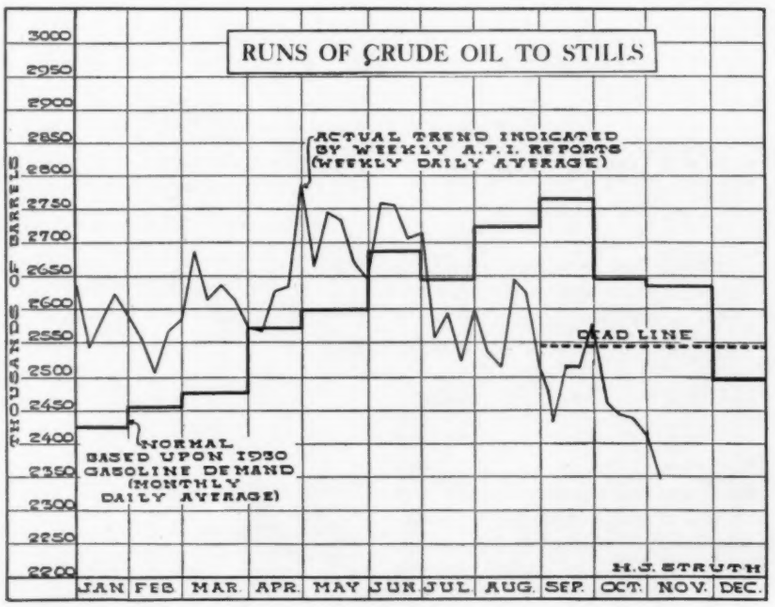


Refinery Curtailment Reducing Gasoline Stocks

A LATE report received from the American Petroleum Institute shows that refinery runs for the week ending November 8 declined another 6000 barrels daily, bringing the average daily throughput for that week down to 2,275,000 barrels, or a total for the week of 15,922,000 barrels. As a result of continued efforts in the direction of curtailed runs, stocks of gasoline showed a decline for the first time in three weeks. Total gasoline stocks reported as of November 8, aggregated 37,012,000 barrels, compared with 37,215,000 barrels on November 1. This represents a decline of 203,000 barrels in total gasoline stocks.

According to the report of the Volunteer Committee on Economics, submitted to the American Petroleum Institute by the Federal Oil Conservation Board, the daily average quantity of domestic crude required during November has been estimated at a maximum figure of 2,180,000 barrels. If we add to this figure the sum of 164,000 barrels, representing the daily average quantity of foreign crude consumed at refineries of the United States, the maximum economic limit of still runs resolves itself to the figure of 2,344,000 barrels daily. Since runs last week amounted to 2,343,000 barrels, it is seen that operations are actually being conducted in an economic manner.

CRUDE RUNS TO STILLS, GASOLINE AND GAS AND FUEL OIL STOCKS, WEEK ENDING NOVEMBER 1, 1930

(Figures in barrels of 42 gallons)

District—	Potential Daily Capacity	Potential Capacity Reporting Total	Potential Capacity Reporting Per Cent	Crude Runs to Stills Total	Crude Runs to Stills Daily Average	Crude Runs to Stills Per Cent Operated	Gasoline Stocks	Gas & Fuel Oil Stocks
East Coast	612,700	612,700	100.0	3,353,000	479,000	78.2	5,766,000	12,280,000
Appalachian	141,300	131,700	93.2	533,000	76,100	57.8	820,000	1,029,000
Indiana, Illinois, Kentucky	390,800	381,000	97.5	1,650,000	235,700	61.9	4,628,000	3,991,000
Oklahoma, Kansas, Missouri	461,100	412,200	89.4	1,687,000	241,000	58.5	2,384,000	4,601,000
Texas	809,000	743,500	91.9	3,573,000	510,500	68.7	6,562,000	10,449,000
Louisiana-Arkansas	266,600	262,000	98.3	1,125,000	160,700	61.3	1,041,000	2,252,000
Rocky Mountain	150,100	139,700	93.1	328,000	46,900	33.6	1,622,000	1,041,000
California	898,500	883,600	98.3	3,722,000	531,700	60.2	14,392,000	103,983,000
Total Week November 1	3,730,100	3,566,400	95.6	15,971,000	2,281,600	64.0	37,215,000	139,626,000
Total Week October 25	3,730,100	3,566,400	95.6	16,397,000	2,342,000	65.7	36,655,000	139,467,000
The Total U. S. Figures for Last Year shown immediately below are not comparable with this week's totals because of difference in percentage capacity reporting.								
Total November 2, 1929	3,678,700	3,499,800	95.1	19,096,000	2,728,200	78.0	33,579,000	*145,522,000
The Texas and Louisiana Gulf Coastal Figures Shown Below are Included above in the Totals of Their Respective Districts.								
Texas Gulf Coast	529,500	529,500	100.0	2,719,000	388,400	73.4	5,275,000	7,636,000
Louisiana Gulf Coast	147,500	147,500	100.0	746,000	106,600	72.3	815,000	1,301,000

*Final Revised.

MARKET SECTION

HOW LAST WEEK'S DAILY AVERAGE PRODUCTION COMPARES WITH NECESSARY AND NORMAL QUOTA LIMIT

	Necessary Daily Average 4th Quarter 1930	Quota Limit Prescribed to Correct Previous Excesses	Actual Daily Average Week Ending November 8, 1930	Excess
Arkansas	59,518	59,518	52,050	—7,468
California	654,034	594,000	596,900	2,900
Kansas	115,407	105,554	117,550	11,996
Louisiana	57,704	57,704	71,150	13,446
Oklahoma	653,252	550,000	489,650	—60,350
Texas	767,167	765,000*	749,200	—15,800
Balance of U. S.	230,000	230,000	220,750	—9,250
Total	2,537,082	2,371,776	2,297,250	—74,526

*New limit account reduction of 10,000 barrels in Panhandle district ordered by railroad commission.

Prairie Applies Oklahoma Plan of Proration to Kansas Fields

TULSA.—Effective Monday, November 10, Prairie Oil and Gas Company adopted the Oklahoma proration plan for its general purchases from all fields not heretofore under specific proration in Kansas. The official statement, issued Friday, November 7, was as follows:

"In all Kansas areas, excepting the Voshell, Ritz, Wright, and Schurr-Raymond pools, which have been and are now under specific proration, Prairie Oil & Gas Company will purchase oil on the marginal basis of five barrels per well per lease and 50 per cent of the remainder. That is to say, if a lease from which it is purchasing oil has a normal production of 100 barrels from four wells, it will purchase 60 barrels, of which 20 barrels represents the marginal five barrels per well and 40 barrels represents 50 per cent of the remainder.

"The company makes no exception in favor of its own leases, but is prorating its production on the same marginal basis. In the present prorated pools, the company purchases in the Voshell pool are reduced from 2300 barrels to 1200 barrels daily, and in the Ritz pool from 1968 to 1000 barrels daily. The Schurr-Raymond pool, until further notice, 550 barrels daily. No change in the percentage basis in the Wright pool."

California Feeling Effect of Eastern Situation

MANY independent engineers believe that California's potential production is considerably less than the total upon which the curtailment setup is based. An open flow test might be of value in determining the true possibilities of the state at this time. No tests of this kind have been made for nine months. Regardless of the outcome of future flow tests, curtailment will be continued through the next year. Abandonment of a small production at this time would result in a much lower crude schedule.

Playa del Rey is still bothering the oil market because of the wide distribution of the heavy crude. It seems a fore-

IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS
(Barrels of 42 gallons)

	Total Month Oct.	Total Month Sept.	Week Ended Nov. 1	Week Ended Oct. 25
AT ATLANTIC COAST PORTS—				
Baltimore	615,000	1,166,000	.....	142,000
Boston	364,000	256,000	68,000	110,000
New York	4,532,000	4,528,000	983,000	1,173,000
Philadelphia	1,096,000	1,035,000	275,000	117,000
Others	836,000	767,000	132,000	171,000
Total	7,443,000	7,752,000	1,458,000	1,713,000
Daily Average	240,097	258,400	208,286	244,714
AT GULF COAST PORTS—				
Galveston District	188,000	193,000	.....	63,000
New Orleans and Baton Rouge	219,000	367,000	135,000	.....
Port Arthur and Sabine District	86,000	.....	86,000	.....
Tampa	79,000	114,000	.....	39,000
Total	572,000	674,000	221,000	102,000
Daily Average	18,451	22,467	31,571	14,571
AT ALL UNITED STATES PORTS—				
Total	8,015,000	8,426,000	1,679,000	1,815,000
Daily Average	258,548	280,867	239,857	259,285
Distribution of Total Imports Is As Follows:				
Crude	4,763,000	5,236,000	1,064,000	885,000
Gasoline	1,361,000	1,511,000	235,000	434,000
Kerosene	.....	35,000	.....	.....
Gas Oil	187,000	60,000	129,000	.....
Fuel Oil	1,704,000	1,584,000	251,000	496,000
Total	8,015,000	8,426,000	1,679,000	1,815,000

CALIFORNIA OIL RECEIPTS AT ATLANTIC AND GULF COAST PORTS
(Barrels of 42 gallons)

	Total Mouth Oct.	Total Month Sept.	Week Ended Nov. 1	Week Ended Oct. 25
AT ATLANTIC COAST PORTS—				
Baltimore	78,000	189,000	.....	.....
Boston	95,000	192,000	.....	95,000
New York	845,000	768,000	74,000	277,000
Philadelphia	509,000	402,000	52,000	116,000
Others	152,000	287,000	.....	"A" 97,000
Total	1,679,000	1,838,000	126,000	585,000
Daily Average	54,161	61,267	18,000	83,571
AT GULF COAST PORTS—				
Total	166,000	73,000	.....	72,000
Daily Average	5,355	2,433	.....	10,286
AT ATLANTIC AND GULF COAST PORTS—				
Total	1,845,000	1,911,000	126,000	657,000
Daily Average	59,516	63,700	18,000	93,857
Distribution of Total California Oil Receipts Is As Follows:				
Gasoline	1,554,000	1,617,000	81,000	"A" 475,000
Kerosene	45,000	.....	45,000	.....
Gas Oil	166,000	52,000	.....	102,000
Fuel Oil	80,000	239,000	.....	80,000
Lubricants	.....	3,000	.....	.....
Total	1,845,000	1,911,000	126,000	657,000

"A"—Revised.

MARKET SECTION

gone conclusion that some kind of limited plan of operation will be worked out for Kettleman Hills.

State production is below 600,000 barrels and efforts will be made to reduce this output by a wide margin. Stocks are not being reduced appreciably and the cost of carrying these excesses is being reflected in smaller company earnings. In addition, each barrel in storage makes the production of additional oil just that much more hazardous.

Fuel oil and gasoline are slightly weaker and the West Coast is feeling the effects of the Eastern price slashes.

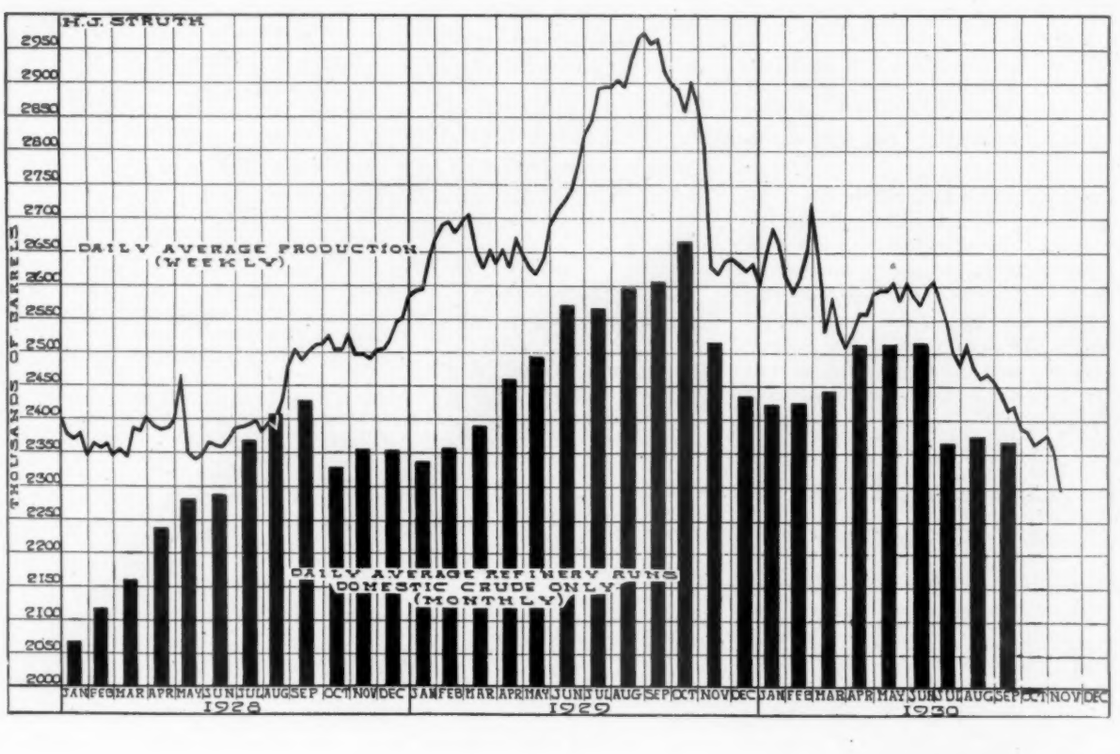
Oklahoma and Texas Lead Production Decline

OKLAHOMA and Texas led the production decline last week, when decreases of 34,850 barrels and 27,500 barrels, respectively were reported therefrom. In addition, the Gulf Coast, Arkansas, Eastern States and Rocky Mountain states reported declines, while Kansas, North Louisiana and California reported increases. The accompanying table showing the status of the various producing states indicates that the national daily average crude production is now about 73,000 barrels below the combined allowable figure of the industry. Arkansas, Oklahoma, Texas and balance of United States show the effect of material reductions in production, while Kansas and Louisiana continue to show an excess over the indicated economic limit. California is only 2900 barrels above the allowable figure for that state, and this is due to the rising production trend at Playa del Rey.

Following are the more important production changes indicated from figures received from the American Petroleum Institute for the week ending November 8:

		Barrels
Gray County	Increase	1,250
Hutchinson County	Increase	1,100
Ector County	Decrease	3,100
Howard County	Decrease	2,200
Winkler County	Decrease	2,200
Yates	Decrease	3,500
Darst Creek	Decrease	17,000
Humble	Decrease	4,600
Refugio	Increase	2,450
Earlsboro	Decrease	3,450
East Earlsboro	Decrease	4,100
Konowa	Decrease	1,100
Little River	Decrease	1,050
Mission	Decrease	1,700
Oklahoma City	Decrease	18,050
West Asher	Increase	2,500
Elwood	Decrease	4,500
Playa del Rey	Increase	3,000
Santa Fe Springs	Increase	2,300
Ventura Avenue	Increase	1,000
Sedgwick	Increase	5,700
Voshell	Decrease	2,000
Zwolle	Increase	1,150

DOMESTIC PRODUCTION AND REFINERY RUNS



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United States Daily Average Production

1930	Oklahoma	Kansas	Texas (Outside Gulf Coast)	Gulf Coast	North Louisiana	Arkansas	Eastern States	Rocky Mountain	California	United States Daily Av.	United States Total
January	671,050	111,700	672,650	178,300	37,650	58,500	142,250	73,850	688,850	2,634,800	81,574,650
February	631,900	111,400	654,600	199,950	39,450	58,400	135,050	74,850	746,550	2,652,150	74,280,200
March	622,650	115,500	644,400	206,000	41,600	58,600	132,700	73,600	649,000	2,544,050	78,865,400
April	657,050	122,200	640,950	206,800	42,100	57,800	138,700	75,950	625,700	2,576,250	77,018,100
May	663,300	131,000	662,350	203,900	39,900	53,800	137,150	82,500	623,700	2,597,700	80,529,600
June	665,550	133,600	668,300	210,500	40,300	56,900	135,750	84,600	598,000	2,593,500	77,806,900
July	594,750	121,600	652,350	209,400	40,550	55,400	137,200	98,350	610,450	2,520,050	78,121,200
August	558,850	115,650	646,400	206,600	41,500	55,100	128,550	106,000	611,250	2,470,900	76,597,600
September	558,900	116,550	606,550	200,750	40,150	53,550	121,400	110,650	604,900	2,413,400	72,402,205
(a)October	544,600	115,150	610,700	195,000	41,300	52,750	121,900	103,300	590,350	2,375,050	73,627,350
November 1	524,500	114,350	615,050	193,150	42,900	53,050	121,400	103,050	595,600	2,363,050	16,541,350
November 8	489,650	117,350	587,550	188,900	43,900	52,050	119,300	101,450	596,900	2,297,250	16,080,750
Increase	.....	3,200	.....	.....	1,000	.....	.....	.....	1,300	.....	.....
Decrease	34,850	.....	27,500	4,250	.....	1,000	2,100	1,600	.....	65,800	460,600

(a)Preliminary—Subject to revision.

TEXAS (Outside Gulf Coast)

	Nov 8	Nov. 1
PANHANDLE DISTRICT		
Carson County	6,900	7,300
Gray County	57,100	55,850
Hutchinson County	18,000	16,900
Wheeler County	800	450
Others	1,350	650
Total	84,150	81,150
NORTH TEXAS		
Archer County	13,300	13,550
Burkburnett	7,800	7,850
Electra	10,350	10,400
Iowa Park-KMA	4,550	4,600
Montague and Cooke Cos	9,300	9,300
Wilbarger	15,500	15,500
Others	1,800	1,900
Total	62,600	63,100
WEST CENTARL TEXAS		
Brown County	5,200	5,400
Callahan County	3,100	3,000
Coleman County	2,450	2,600
Eastland-Desdemona	4,950	5,300
Jack County	2,200	2,250
Palo Pinto County	450	500
Shackelford County	5,200	5,650
Stephens County	5,400	5,300
Throckmorton County	650	700
Young County	14,500	14,700
Others	2,000	2,000
Total	46,100	47,400
WEST TEXAS		
Crane-Upton Counties	35,900	35,500
Crockett County	2,100	2,100
Ector	5,250	8,350
Howard County	29,400	31,600
Jones County	1,400	1,300
Mitchell-Scurry Cos.	2,200	2,200
Pecos County	3,050	3,000
Reagan County	26,150	26,200
Winkler County	58,100	60,300
Yates	102,600	106,100
Others	6,550	6,900
Total	272,700	283,550
EAST CENTRAL TEXAS		
Boggy Creek	2,600	2,600
Corsicana-Powell	5,400	5,350
Currie	300	300
Mexia	4,100	4,050
Nigger Creek	200	200
Richland	200	200
Van Zandt	27,550	28,100
Wortham	700	700
Total	41,050	41,500
SOUTHWEST TEXAS		
Chapman-Abbott	8,300	7,850
Dale	300	300
Darst Creek	30,500	47,500
Laredo District	13,550	13,550
Luling	9,850	10,000
Lytton Springs	800	800
Salt Flat	15,600	16,300
Somerset	1,500	1,550
Others	550	500
Total	80,950	98,350
Tt'l Tex. (outside Gulf Coast)	587,550	615,050
TEXAS GULF COAST		
Barbers Hill	19,400	20,250
Batson	1,150	1,150
Big Creek	3,400	3,700
Blue Ridge	1,650	1,650
Boling	950	950
Damond Mound	700	700
Esperson	3,000	2,900
Fannett	650	650
Goose Creek	4,250	4,400
Hankamar	2,200	1,650
Hull	7,800	7,600
Humble	13,900	18,500
North Dayton	1,700	1,900
Orange	2,100	2,200
Orchard	2,300	2,150
Pettus	8,300	7,500
Pierce Junction	11,150	10,500
Port Neches	1,500	1,450
Raccoon Bend	8,350	8,900
Refugio	26,500	24,050
Saratoga	1,200	1,200
Somerville	1,100	2,300
Sour Lake	2,200	2,200
South Liberty	3,100	3,100
Spindle Top	14,500	14,750
Sugar Land	12,000	12,300
West Columbia	4,150	4,300
Others	2,450	2,300
Total	161,650	165,200
Texas Total	749,200	780,250
OKLAHOMA		
Allen	14,100	13,550
Asher	1,000	1,050
Blackwell	2,900	3,100
Bowlegs	13,400	13,700
Braman	2,900	3,100
Bristow Slick	13,500	14,100
Burbank	14,800	14,850
Carr City	9,300	10,050
Cromwell	6,550	7,000
Cushing	12,750	13,350
Davenport	1,000	1,050
Duncan District	8,250	8,600
Earlsboro	14,950	18,400
East Earlsboro	14,500	18,600
East Little River	12,100	11,900
East Seminole	2,100	2,150
Fox	1,150	1,200
Garber	4,400	4,650
Graham	3,050	3,200
Healdton	11,450	11,950
Hewitt	6,650	6,600
Hubbard	1,200	1,300
Konowa	16,500	17,600
Little River	22,750	23,800
Logan County	4,650	4,700
Maud	3,050	3,100
Mission	5,450	7,150
North Okmulgee	9,900	10,100
Oklahoma City	66,750	84,800
Osage (outside Burbank)	24,400	24,400
Papoose	2,400	2,550
Pearson	650	700
St. Louis	22,200	21,800
Sasakwa	4,900	5,250
Scholem Alechem	13,450	13,900
Searight	6,850	6,600
Seminole	13,400	13,600
South Earlsboro	8,650	8,500
South Okmulgee	6,600	6,750
Thomas	650	650
Tonkawa	5,800	6,100
West Asher	10,500	8,000
Wewoka	5,000	5,500
Yale Jennings	6,650	6,900
Others	56,500	58,600
Total	489,650	524,500
CALIFORNIA		
Dominguez	10,000	10,000
Elwood-Goleta	33,000	37,500
Huntington Beach	28,000	28,000
Inglewood	15,300	15,300
Kettleman Hills	25,500	25,500
Long Beach	98,600	98,500
Midway-Sunset	59,000	59,000
Playa Del Rey	35,000	32,000
Santa Fe Springs	96,300	94,000
Seal Beach	18,400	19,000
Ventura Avenue	46,300	45,300
Others	131,500	131,500
Total	596,900	595,600
KANSAS		
Augusta-Fox Bush	2,850	2,900
Churchill	3,500	3,500
Eldorado-Towanda	13,900	13,950
Florence-Covert	800	800
Greenwood County	19,000	19,050
Oxford	2,450	2,500
Peabody-Ebling	2,350	2,350
Rainbow Bend	1,050	1,050
Russell	3,050	3,050
Sedgewick	28,600	22,900
Voshell	6,000	8,000
Others	34,000	34,300
Total	117,550	114,350

NORTH LOUISIANA

	Nov 8	Nov. 1
Caddo Heavy	2,700	2,750
Caddo Light	8,400	8,300
Carterville	2,500	2,800
Cotton Valley	1,850	1,850
DeSoto-Red River	2,900	2,950
Haynesville	5,250	5,150
Holly	1,200	1,000
Homer	3,350	3,400
Urania	5,350	5,450
Zwolle	8,700	7,550
Others	1,700	1,700
Total North Louisiana	43,900	42,900
LOUISIANA GULF COAST		
Bayou Boullion	200	200
East Hackberry	2,050	2,000
Edgerly	400	500
Evangeline	2,000	2,000
Hackberry	800	950
Lake Barre	2,400	2,500
Lockport	3,900	3,600
Port Barre	2,550	2,800
Sorrento	50	50
Sulphur Dome	2,600	3,250
Sweetlake	1,150	1,150
Vinton	5,500	5,900
White Castle	1,050	1,050
Others	2,600	2,000
Total Louisiana Gulf Coast	27,250	27,950
Louisiana Total	71,150	70,850
ARKANSAS		
Champagnolle	3,450	3,700
El Dorado	3,900	4,050
Lisbon	900	850
Nevada	1,000	1,000
Smackover Heavy	35,800	36,350
Smackover Light	4,850	4,950
Stephens	900	900
Others	1,250	1,250
Total	52,050	53,050
MOUNTAIN STATES		
WYOMING		
Big Muddy	2,050	2,000
Elk Basin	800	800
Grass Creek	2,150	2,050
La Barge	1,800	1,650
Lance Creek	250	200
Lost Soldier	3,150	3,900
Oregon Basin	2,550	2,550
Rock River	2,100	2,100
Salt Creek	28,900	28,450
Others	4,100	5,000
Total	47,850	48,700
MONTANA		
Cat Creek	1,100	1,100
Pondera	1,650	1,350
Sunburst	2,550	5,100
Others	50	50
Total	5,350	7,600
COLORADO		
Florence	400	650
Fort Collins	1,100	1,100
Moffats (Craig)	1,300	1,300
Others	1,500	1,450
Total	4,300	4,500
NEW MEXICO		
Artesia	550	550
Balance Lea County	7,400	7,500
Hobbs High	34,200	32,400
Hogback	450	450
Rattlesnake	1,150	1,150
Table Mesa	100	100
Eddy	100	100
Totals	43,950	42,250
Total Mountain States	101,450	103,050
EASTERN STATES		
(Including Ill., Ind., Ohio, W. Va., Pa., Ky., N. Y.)	112,000	114,000
Michigan	7,300	7,400
Total Eastern States	119,300	121,400
PRODUCTION SUMMARY		
East of Rockies	1,598,900	1,664,400
Total U. S.	2,297,250	2,363,050

MARKET SECTION

Weekly Comparisons of Permits Granted for New Wells

	Week Ending November 8	Previous week	This week 1929	Total this month	This month 1929	Total this year	Total this date last year	1929 year total
Arkansas	5	1	..	5	..	97	145	159
California	24	27	11	24	35	812	1,113	1,231
Louisiana	15	11	26	15	42	869	803	903
Kansas	19	8	14	19	42	871	977	1,079
Oklahoma	47	45	75	47	158	2,602	3,095	3,578
Texas	67	88	154	67	367	6,449	7,621	8,697
Total	177	180	280	177	644	11,700	13,754	15,647

Issues New Proration Order for Oklahoma City Field

Oklahoma City.—The Oklahoma Corporation Commission has issued a new proration order to be applied in the Oklahoma City pool until such time as the field storage situation has become improved.

Otto Bradford, field umpire, estimated that oil now in storage and that allowable to wells underproduced during former proration periods would total approximately 3,000,000 barrels. Pipe line companies have been taking about 80,000 barrels daily and, with potential rapidly increasing through the completion of large wells in the north end of the pool, something drastic had to be done.

The new order provides that producing wells which have served their 65-day shut-in and are evenly produced, will be allowed to flow four hours during each 12-day period. New wells will be allowed an eight-hour flow for testing and will then be shut-in to complete the remainder of the 65-day period, but the initial testing time will be charged against the well and must be made up before starting on the new schedule for evenly produced wells.

Over-produced wells are to be shut-in until they have become even with the other classes of wells, and those under-produced will be allowed to produce to the fullest extent to which marketing and transportation facilities permit.

Playa del Rey to Be Prorated

Los Angeles.—The movement to include Playa del Rey in the curtailment set-up is gaining ground and there is a possibility that the field will be allowed about 50 per cent of its potential and a price schedule posted for the district. More than 100 operators attended a meeting recently and it was evident that they feel the necessity for recognition by the curtailment committee and the principal purchasing companies. Concessions will have to be made by both sides before much progress can be made. Production has passed 30,000 barrels and has become a market factor, due to the wide distribution of the crude. Many small operators want every barrel of oil they can get, especially those who are just breaking into the producing game. A committee has been appointed to work out details. Neil H. Anderson, umpire for the Long Beach field, will be umpire for the Playa del Rey district.

Summarized Review of Field Results

State—	Completions This week.	Completions Last week.	Oil Wells This week.	Oil Wells Last week.	Gas Wells This week.	Gas Wells Last week.	Failures This week.	Failures Last week.	Initial Prod. This week.	Initial Prod. Last week.
Arkansas	2	4	..	3	1	..	1	1	....	1,070
California	31	25	27	24	..	..	4	1	12,830	28,550
Illinois	7	8	4	3	1	..	2	5	75	83
Indiana	1	1	1	..	..	..	..	1	20	....
Kansas	14	14	3	4	8	5	3	5	515	3,200
Kentucky	15	16	11	6	2	2	2	8	1,283	177
Louisiana	21	18	7	9	4	4	10	5	2,136	6,590
Michigan	2	6	2	2	..	3	..	1	453	800
Mississippi	4	1	..	..	3	..	1	1	....	....
New Mexico	7	6	5	6	1	..	1	..	50,884	74,470
New York	..	5	..	4	..	..	..	1	....	8
Ohio	39	23	15	3	14	10	10	10	225	155
Oklahoma	38	51	25	25	2	5	11	21	79,064	99,006
Pennsylvania	2	14	..	8	1	1	1	5	....	19
Texas	86	93	46	61	6	5	34	27	34,836	40,858
West Virginia	9	17	2	3	7	13	..	1	7	8
Missouri	1	..	..	..	..	..	1	..	....	....
Total	279	302	148	161	50	48	81	93	182,328	254,994
Increase	..	..	..	..	2	..	..	..	....	....
Decrease	23	..	13	..	..	..	12	..	72,666	....

MARKET SECTION

Crude Oil Price Quotations

(Revised to November 11, 1930)

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)

Bradford—Alleghany district (posted by Tide Water Pipe Co., Ltd.) (Effective Nov. 1, 1930)	$2.30
Penna. Grade Oil in National Transit Lines (Other Pennsylvania) (Effective, Nov. 1, 1930)	1.95
Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania) (Effective Nov. 1, 1930)	2.00
Penna. Grade Oil in Eureka Pipe Lines (West Virginia) (Effective Nov. 1, 1930)	1.85
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.) (Effective Nov. 1, 1930)	1.60
Wayne district crude in Cumberland lines (West Virginia) (Effective July 23, 1930)	1.17
Corning Grade in Buckeye Pipe Lines (Ohio) (Effective Oct. 28, 1930)	1.25
Somerset Oil in Cumberland Pipe Lines (Kentucky) (Effective July 23, 1930)	1.30
Somerset Oil in Eureka Pipe Lines (Effective July 23, 1930)	1.14
Ragland Grade in Cumberland Pipe Lines (Kentucky) (Effective Jan. 9, 1929)... *Oil run prior to July 1, 1929 is $2.10 per bbl.	0.60

(Posted by Stoll Oil Refining Company)

Oil City, Ky., oil in Stoll lines (Effective July 25, 1930)	1.35

MICHIGAN

(Posted by Dixie Oil Company)

Traverse and Dundee (Muskegon), effective April 16, 1930, same gravity and price schedule as Prairie posts in Oklahoma and Kansas, on gravity basis prior to reduction on Oct. 27, 1930.

(Posted by Pure Oil Company)

Midland, Midland County ,Aug. 21, 1930).$1.30

CENTRAL STATES FIELDS

(Posted by Ohio Oil Company)

(Effective Oct. 28, 1930)

Wooster	$1.35	Princeton	1.30
Lima	1.10	Illinois	1.30
Waterloo	1.20	Plymouth	.88
Indiana	.87	W. Kentucky	1.15

CANADIAN CRUDE

(Posted by Imperial Oil Refineries, Ltd.)

(Effective October 28, 1930)

Petrolia	$1.50
Oil Springs	1.57

OKLAHOMA, KANSAS and NORTH TEXAS

Prices of Prairie Oil & Gas Co., and Stanolind Crude Oil Purchasing Company, Effective Nov. 1, 1930. Carter Oil Company Same Schedule Effective Oct. 28.

Below 29	$0.65	31-31.9	.92
29-29.9	.69	36-36.9	.95
30-30.9	.73	37-37.9	.98
31-31.9	.77	38-38.9	1.01
32-32.9	.81	39-39.9	1.04
33-33.9	.85	40 and above..	1.07
34-34.9	.89		

Magnolia Petroleum Company Effective October 28.

Below 26	.53	27-27.9	.61
26-26.9	.57	28-28.9	.65

From here to 40 and above gravity same schedule as above.

NORTH TEXAS

Posted by All Purchasers Except Magnolia Petroleum Company

Ranger, North Texas, Van, Mexia, Powell, Boggy Creek, Richland, Wortham, Lytton Springs, Currie, Moran, and Nocona crudes:

Below 29	$ .65	35-35.9	.92
29-29.9	.69	36-36.9	.95
30-30.9	.73	37-37.9	.98
31-31.9	.77	38-38.9	1.01
32-32.9	.81	39-39.9	1.04
33-33.9	.85	40 and above..	1.07
34-34.9	.89		

Magnolia Petroleum Company, Effective October 28

Below 26	.53	27-27.9	.61
26-26.9	.57	28-28.9	.65

From here to 40 and above gravity same as schedule above.

PANHANDLE

Posted by All Purchasers, Effective Oct. 28, 1930

Gray County Crude

Below 29	$ .50	30-30.9	.58
29-29.9	.54	31-31.9	.62

(Continued on page 66)

Crude Oil Prices at the Well

San Francisco, Cali., September 12, 1930

Effective September 15, 1930, at 7:00 A. M. the following are the current prices offered by
STANDARD OIL COMPANY OF CALIFORNIA
For Crude Oil at the Well (Except Elwood Terrace as below).
Price Per Barrel in Fields Indicated

Gravity	Signal Hill	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Olinda-Brea Canou	Athens-Rosecrans Dominguez	Elwood Terrace	Torrance	Richfield	Whittier La Habra	Montebello	Coyote Hills	Santa Fe Springs	Newhall McKittrick Kern River	Midway-Sunset Elk Hills	Buena Vista Hills	Lost Hills	Coalinga	Wheeler Ridge	Gravity
14-14.9	$ .70	$ .70	$ .70	$ .70	$ .70	$ .70			$ .70	$ .70	$ .70	$ .70	$ .70		$ .55	$ .55	$ .55	$ .55	$ .55	$ .55	14-14.9
15-15.9	.70	.70	.70	.70	.70	.70			.70	.70	.70	.70	.70		.55	.55	.55	.55	.55	.55	15-15.9
16-16.9	.70	.70	.70	.70	.70	.70			.70	.70	.70	.70	.70		.55	.55	.55	.55	.55	.55	16-16.9
17-17.9	.70	.70	.70	.70	.70	.70			.70	.70	.70	.70	.70		.55	.55	.55	.55	.55	.55	17-17.9
18-18.9	.76	.76	.76	.76	.76	.76			.76	.76	.76	.71	.76		.55	.62	.62	.62	.62	.62	18-18.9
19-19.9	.82	.82	.82	.82	.82	.82			.82	.82	.82	.77	.82		.55	.70	.70	.70	.70	.70	19-19.9
20-20.9	.88	.88	.88	.88	.88	.88			.88	.88	.87	.83	.87			.78	.78	.78	.78	.78	20-20.9
21-21.9	.94	.94	.94	.94	.94	.94			.94	.94	.93	.90	.93	$ .92		.86	.86	.86	.86	.86	21-21.9
22-22.9	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	.98	.97	.98	.95		.94	.94	.94	.94	.94	22-22.9
23-23.9	1.07	1.07	1.07	1.07	1.07	1.07			1.07	1.07		1.05	1.04	1.01		1.02	1.02	1.02	1.02	1.02	23-23.9
24-24.9	1.12	1.12	1.12	1.12	1.12	1.12	$1.12		1.12	1.12		1.08	1.08	1.05		1.06	1.06	1.06	1.04	1.04	24-24.9
25-25.9	1.17	1.17	1.17	1.17	1.17	1.17	1.17		1.17	1.17		1.11	1.12	1.09		1.10	1.10	1.10	1.06	1.06	25-25.9
26-26.9	1.22	1.22	1.22	1.22	1.22	1.23	1.22		1.22	1.22		1.15	1.16	1.13		1.14	1.14	1.14	1.08	1.08	26-26.9
27-27.9	1.26	1.26	1.26	1.26	1.26	1.26	1.27		1.26	1.26		1.19	1.21	1.18		1.18	1.18	1.18	1.11	1.10	27-27.9
28-28.9	1.30	1.30	1.30	1.30	1.30	1.30	1.32		1.30	1.30		1.23	1.25	1.23		1.23	1.23	1.23	1.15		28-28.9
29-29.9	1.34	1.34	1.34	1.34		1.34	1.37			1.34		1.26	1.29	1.28		1.29	1.29	1.29	1.19		29-29.9
30-30.9	1.38	1.38	1.38	1.38		1.38	1.42			1.38		1.29	1.33	1.33		1.35	1.35	1.35	1.23		30-30.9
31-31.9	1.43	1.43	1.43	1.43		1.43	1.43							1.38		1.41	1.41	1.41	1.27		31-31.9
32-32.9	1.48	1.48	1.48	1.48			1.52							1.43		1.47	1.47	1.47	1.31		32-32.9
33-33.9							1.57							1.48		1.53	1.53	1.53	1.35		33-33.9
34-34.9							1.62							1.53				1.59	1.39		34-34.9
35-35.9							1.66							1.58				1.65	1.43		35-35.9
36-36.9							1.72							1.63							36-36.9
37-37.9							1.78							1.68							37-37.9
38-38.9							1.84							1.73							38-38.9
39-39.9							1.90							1.78							39-39.9
40-40.9							1.96														40-40.9
41-41.9							2.02														41-41.9
42-42.9							2.08														42-42.9
							F. O. B. Ship														

KETTLEMAN HILLS*	
35-39.9	$1.10
40-44.9	1.20
45-45.9	1.35
50-54.9	1.50
55 and above	1.65

*Posted by Union Oil Company.

MARKET SECTION

CRUDE OIL PRICE QUOTATIONS (*Continued from Page 65*)

32-32.9	.66	37-37.9	.83
33-33.9	.70	38-38.9	.86
34-34.9	.74	39-39.9	.89
35-35.9	.77	40 and above	.92
36-36.9	.80		

Carson and Hutchinson County Crudes

Below 29	$ .45	35-35.9	.72
29-29.9	.49	36-36.9	.75
30-30.9	.53	37-37.9	.78
31-31.9	.57	38-38.9	.81
32-32.9	.61	39-39.9	.84
33-33.9	.65	40 and above	.87
34-34.9	.69		

WEST TEXAS

Posted by All Purchasers Except The Texas Company, Effective October 28, 1930

Winkler and Pecos County Crudes:

Below 25	$ .55	31-31.9	.69
25-25.9	.57	32-32.9	.71
26-26.9	.59	33-33.9	.73
27-27.9	.61	34-34.9	.75
28-28.9	.63	35-35.9	.77
29-29.9	.65	36 and above	.79
30-30.9	.67		

Crane, Upton, Crockett, Ector, Ward, Loving, Mitchell,* Howard, and Glasscock Counties, Texas, and Lea County, New Mexico crudes

Posted by All Purchasers, Effective Oct. 28, 1930

Below 25	$ .50	31-31.9	.64
25-25.9	.52	32-32.9	.66
26-26.9	.54	33-33.9	.68
27-27.9	.56	34-34.9	.70
28-28.9	.58	35-35.9	.72
29-29.9	.60	36 and above	.74
30-30.9	.62		

*Magnolia Petroleum Company uses Gravity scale and Coltex Refining Company pays flat price of 60 cents for Mitchell County.

GULF COAST

(Posted by Humble Oil & Refining Company, The Texas Company and Sun Company)

Gulf Coast Crude will be classified as follows in fields designated below:

Goose Creek, Hull, Boling, Liberty, Orange, Pierce Junction, Raccoon Bend, Barbers Hill, Sour Lake, Spindletop, Sugar Land, West Columbia and Humble crudes:

"A" GRADE—All crudes conforming to the following tests:

Viscosity—Not less than 100 seconds at 100° F. Saybolt.

Sulphur—Not over .4%.

Beaume Gravity—Not over 25 at 60° F.

Cold test of distillates having a viscosity of 1000 seconds at 100° F, shall not be over 5° F.

"A" GRADE—$1.00.

"B" GRADE — Embraces all Coastal crude which does not meet the test for "A" grade crude:

Below 25	$ .75	33-33.9	1.08
25-25.9	.92	34-34.9	1.10
26-26.9	.94	35-35.9	1.12
27-27.9	.96	36-36.9	1.14
28-28.9	.98	37-37.9	1.16
29-29.9	1.00	38-38.9	1.18
30-30.9	1.02	39-39.9	1.20
31-31.9	1.04	40 and above	1.22
32-32.9	1.06		

Markham (The Texas Company) ..... .75

Posted by Gulf Pipe Line Company, Effective October 30, 1930

High Island	$ .75		
Grade "A"	.80		
Grade "B"			
Below 25	$ .69	33-33.9	.87
25-25.9	.71	34-34.9	.89
26-26.9	.73	35-35.9	.91
27-27.9	.75	36-36.9	.93
28-28.9	.77	37-37.9	.95
29-29.9	.79	38-38.9	.97
30-30.9	.81	39-39.9	.99
31-31.9	.83	40 and above	1.01
32-32.9	.85		
Jennings, La.			.80

SOUTHWEST TEXAS

Posted by All Purchasers, Effective Oct. 28, 1930

Refugio Heavy crude, below 25 gravity.. .75

Refugio Light crude:

25-25.9	$ .92	33-33.9	1.08
26-26.9	.94	34-34.9	1.10
27-27.9	.96	35-35.9	1.12
28-28.9	.98	36-36.9	1.14
29-29.9	1.00	37-37.9	1.16
30-30.9	1.02	38-38.9	1.18
31-31.9	1.04	39-39.9	1.20
32-32.9	1.06	40 and above	1.22

Mirando crude	$. 75
Salt Flat crude	.90
Darst Creek crude	.90
Pettus crude	1.10
Luling	.75
Corsicana, heavy	.75

Determination of quality, deductions, adjustment for temperature, etc., on oil purchased in Texas, shall be in accordance with the rules and regulations of the Texas Railroad Commission, and on oil purchased in New Mexico shall be in accordance with the rules and regulations of the Corporation Commission of New Mexico.

LOUISIANA-ARKANSAS

All Purchasers Except Magnolia Petroleum Co., Effective Oct. 29, 1930

Pine Island District, Haynesville District, Bull Bayou District, El Dorado District, Rainbow District, Cotton Valley

Below 29	$ .65	37 to 37.9	.98
29 to 29.9	.69	38 to 38.9	1.01
30 to 30.9	.73	39 to 39.9	1.04
31 to 31.9	.77	40 to 40.9	1.07
32 to 32.9	.81	41 to 41.9	1.10
33 to 33.9	.85	42 to 42.9	1.13
34 to 34.9	.89	43 to 43.9	1.16
35 to 35.9	.92	44 and above	1.19
36 to 36.9	.95		
Urania, La.			.75
Bellevue, La.			1.00

Magnolia Petroleum Company, Effective October 30, 1930

Below 26	$ .53	27-27.9	.61
26-26.9	.57	28-28.9	.65

From here prices same as schedule above.

STEPHENS

Below 29	$ .54	31 to 31.9	.66
29 to 29.9	.58	32 and above	.70
30 to 30.9	.62		
Smackover			.70
El Dorado, East Field			.70

ROCKY MOUNTAIN FIELDS

(Salt Creek prices effective April 10, 1930)

‡Salt Creek		29-29.9	$1.00
"	"	30-30.9	1.05
"	"	31-31.9	1.10
"	"	32-32.9	1.15
"	"	33-33.9	1.185
"	"	34-34.9	1.22
"	"	35-35.9	1.255
"	"	36-36.9	1.29
"	"	37 and above	1.325
Elk Basin (Effective Oct. 28, 1930)			1.25
Grass Creek light			1.25
Big Muddy			1.00
Lance Creek			1.33
Rock Creek			1.01
Mule Creek			1.20
Rex Lake			1.10
‡Osage			1.25
‡Cat Creek, Montana			1.55
Pondera			1.45
Sunburst, Montana			1.55
‡Hogback, New Mexico			1.40
Artesia, New Mexico			.75

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin.

STATE CRUDE PRODUCTION TAXES

Oklahoma—Three per cent of gross value, less royalty interest.

Texas—Two per cent of gross value.

Louisiana—From four to 11 cents a barrel, depending upon gravity.

Arkansas—2.6 per cent of gross market value.

Montana—Two per cent of gross value at well.

Wyoming and New Mexico—Production tax based upon state and county assessments.

California—.66443 mills per barrel of oil produced and 17.39 cents per acre on proved oil lands.

Sun Sells Smackover Leases

El Dorado, Arkansas.—Sun Oil Company has sold its producing leases in the Smackover field, involving a gross production of about 600 barrels daily, to Lion Oil Refining Company effective November 1 for a reported consideration of $150,000. The deal involves nine separate leases, with 38 pumping wells, and also deep production rights. Sun Oil Company reserved its surplus equipment held in warehouses, and is retaining the services of its field force in connection with the transfer and disposal of the equipment. Sun Oil Company retained its undeveloped acreage in Arkansas, and also the interest held with Simms Oil Company and others in a joint oil producing property.

MELLOWED A HUNDRED MILLION YEARS

At last . . . a pure PENNSYLVANIA grade motor oil for easy starting . . . AND EASY SALES . . . in winter!

Motorists by the thousands saw this startling, striking picture of a prehistoric monster . . . in magazines, newspapers and rotogravures from coast to coast. Then that line *"Mobiline is guaranteed to flow at zero"* caught their eyes. And now they ask for Sinclair Mobiline!

No longer need your Pennsylvania oil customers change to another motor oil for winter driving. The wax that thickens and hardens Pennsylvania oils on cold, wintry days is virtually stripped from Mobiline at as low as 60° F. below zero. This dewaxing process, requiring new oil separators whirling at 15,000 revolutions a minute, takes place in the Sinclair refinery at Wellsville, N. Y. . . . the newest and largest single refinery using Pennsylvania grade crude exclusively.

Here Sinclair Mobiline is refined 100% from Bradford-Allegany crude . . . formed in the Devonian Age, a hundred million years ago . . . the costliest of all Pennsylvania crudes! Here this famous crude is triple-filtered to remove all carbon-forming compounds . . . Mobiline retains its clear greenish color long after other oils have turned black in the crankcase.

Just think it over . . . this striking sales story behind Sinclair Mobiline! You can't beat it! With Sinclair Mobiline this winter you get away from cold weather complaints . . . and get more satisfied. steady customers. Stock up now — winter's here!

Sinclair Refining Company (Inc.), New York, Atlanta, Chicago, Fort Worth, Houston, Kansas City. Sinclair Refining Company of Canada, Ltd., Toronto. Sinclair Refining Company of California, Los Angeles.

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Pennsylvania MOTOR OIL

Made in the newest, largest single refinery using PENNSYLVANIA grade crude exclusively.

Guaranteed by SINCLAIR REFINING CO. INC. to be 100% pure PENNSYLVANIA GRADE OIL

35¢ *per quart*

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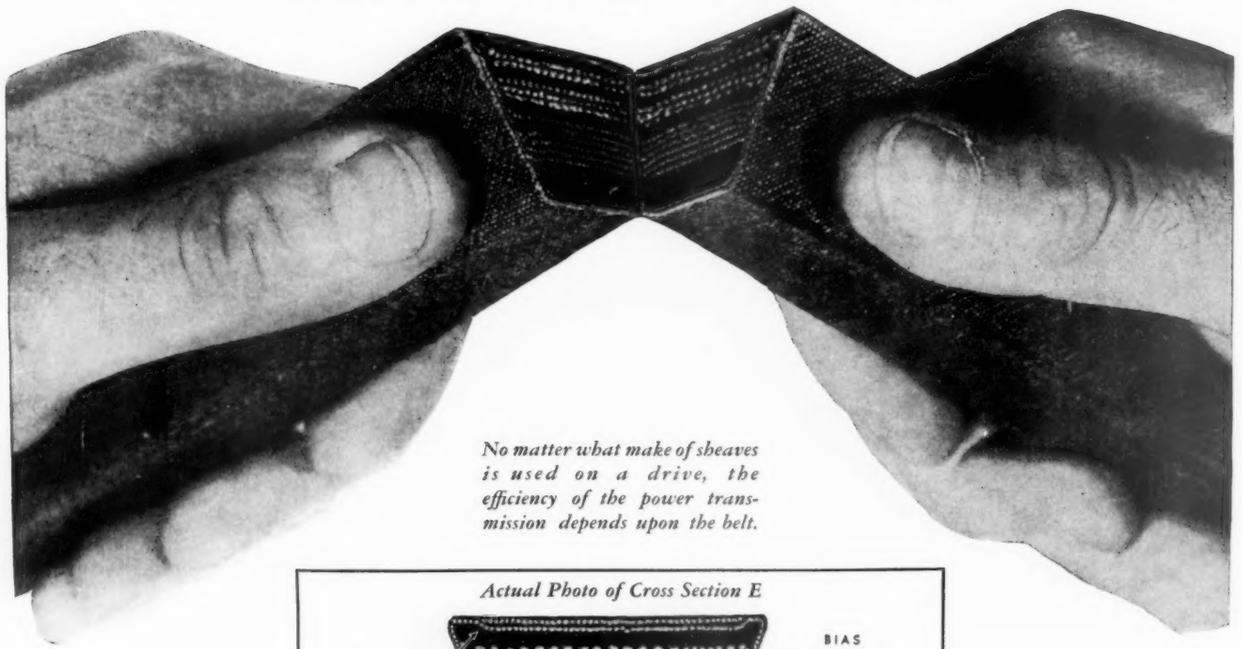
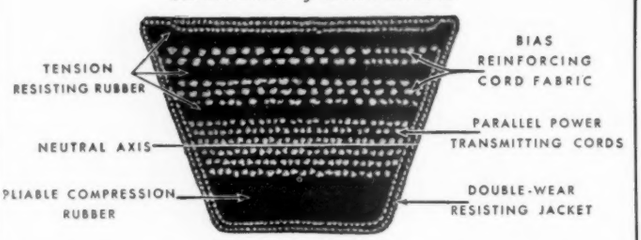
A V-Belt Drive is no Better than the Belt...



No matter what make of sheaves is used on a drive, the efficiency of the power transmission depends upon the belt.

Actual Photo of Cross Section E



Patented Construction

Here is an actual demonstration of the scientific design and construction that bring about Gilmer V-Belt superiority. Every detail is there for a specific purpose — Gilmer does not manufacture a drive. The very fact that the huge Gilmer V-Belt business is built on replacements of other belts speaks for itself.

When a V-Belt bends around a sheave the upper part is in tension, the lower in compression. At some point — *the neutral* axis — neither force is present. At this point, in every Gilmer V-Belt, will be found superimposed layers of unusually strong cords — *a feature originated by Gilmer engineers.* These cords transmit the load without stretching and without setting up internal friction.

Above and below these cords is tough wear-resisting rubber. The upper and tougher rubber is compounded for repeated bendings without deterioration, while the lower and more pliable is compounded to resist compression.

On large Gilmer V-Belts, bias reinforcement cords are added to provide lateral stiffening against buckling. The cords and rubber layers are surrounded by two outer-jackets of rubber impregnated, wear-resisting duck, which excludes foreign matter — The entire belt is vulcanized into one solid elastic mass that possesses maximum stamina and strength.

Since all Gilmer V-Belts are made in accurate metal molds, their dimensions and angles are invariably correct. And — because of their design and construction they *will not twist or buckle in the grooves.*

Gilmer V-Belts have earned an enviable reputation for PERFORMANCE — they have proved themselves in industry after industry — When you are offered Gilmer V-Belts you can be sure that one all-important problem in power transmission is solved — "Belts by Gilmer" means efficiency – plus. L. H. Gilmer Co., Keystone & Cottman Streets, Tacony, Philadelphia, Penna.

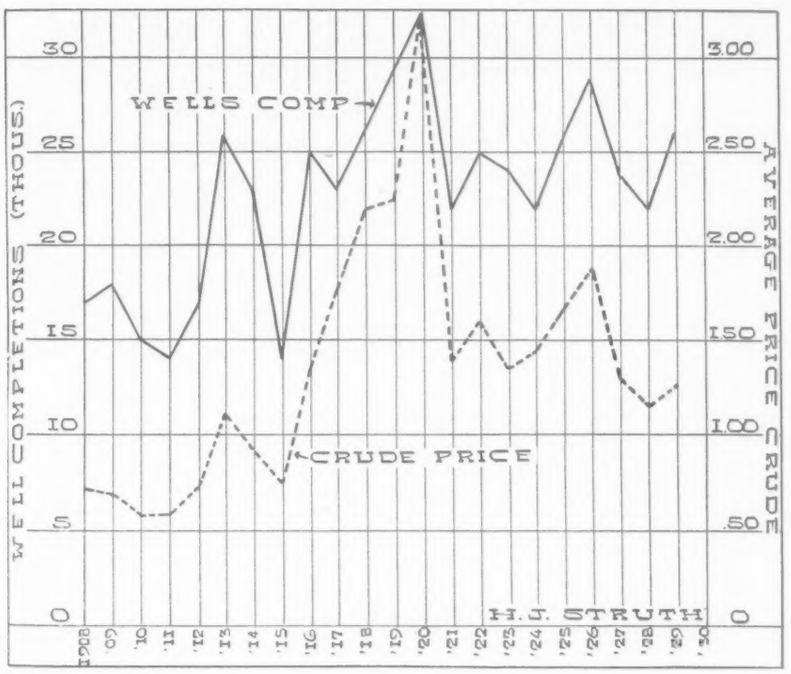
Patented Construction

Makers of the World's Best-Known V-Belts

Low Crude Prices Stop Unnecessary Drilling

By H. J. STRUTH
Staff Economist

IT is particularly interesting at this time to call the industry's attention to the effect of price trends upon oil field developments. The economic cycle of the petroleum industry shows, unmistakably, that values have a direct influence upon oil field developments, as well as production of both crude and refined petroleum. In fact, the history of oil developments has distinctly defined a definite relationship between the price of crude petroleum and the course of drilling. This is shown in the accompanying chart portraying the course of crude oil prices in the United States and number of wells drilled over a period of 22 years.



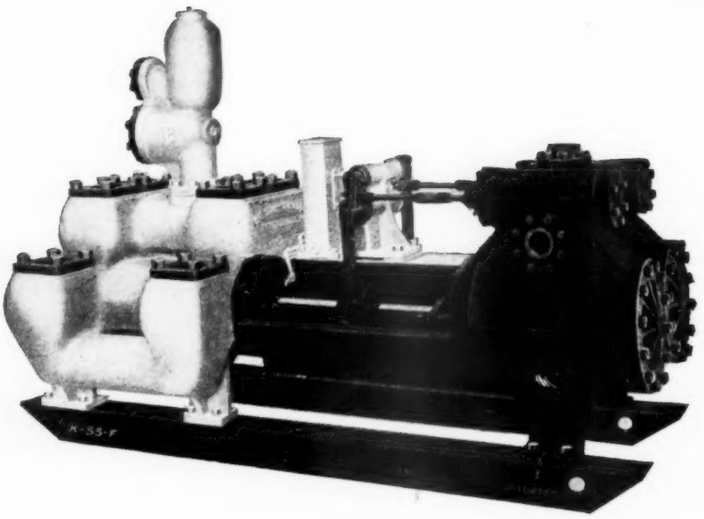
Showing how well completions follow average crude price fluctuations

In view of recent price reductions inaugurated in practically all fields east of California, projection of the basic facts shown on the accompanying chart indicates that drilling will probably be even more sharply curtailed than actual records for the present year have shown. The fact that well completions turned upward during 1929, following a slight advance in crude prices despite actual and threatened over-production, signified an unfavorable sign. Further, the failure of many in the industry to recognize the need for curtailed drilling during the present year has contributed to some extent to the general unfavorable situation prevailing at this time. While the production of many wells completed this year has been throttled by proration, the fact remains that potentials have been greatly increased and have further beclouded the outlook for the producer.

It is apparent from the foregoing facts that the recent decline in crude prices will undoubtedly enforce cessation of unnecessary drilling to an effective degree, supplying the coercive power that seems to have been necessary to fulfill stabilization plans. Thus, while it has been proven possible to control the production situation to some degree through proration, it is significant that the economic law of supply and demand has again functioned to bring about a stoppage of over-development that had until recently defied efforts at control. With prices of crude at their present low levels, there is sufficient reason to believe that drilling will immediately show a sharp decline. It is perhaps significant in this connection to note also that well completions and new drilling had begun to decline sharply during the past two months, indicating that a recession in the crude market was foreshadowed. Had drilling been curtailed earlier in the year, it is believed that recent cuts in crude prices would not have been necessary. As in the case of several other phases of the economic structure of the industry, however, corrective measures had been delayed too long to prevent the consequences that were hastily and unsuccessfully sought to be avoided.

Conditions Not Warranted

Present conditions in the producing branch of the industry are not fully warranted by virtue of a materially improved statistical position. They are, however, warranted at least temporarily as a forceful corrective influence upon such unfavorable developments as unnecessary drilling of new wells in flush producing areas of the United States. The saying, "It is always darkest before the dawn," applies only too well to the petroleum industry at this time. That the present state of depression will be but temporary is indicated by the fact that both producers and refiners are now in full accord with measures of proration and curtailment. With crude production down to a sane level and refinery runs curtailed to a level that must result in substantial withdrawals from storage, and with crude prices depressed to the point that will enforce immediate cessation in drilling, it is logical to conclude that general improvement will accompany the developments of the very near future. Whether a turn for the better will be sustained and enhanced by further improvement throughout the coming year depends entirely upon how effectively the industry manages to control the factors that have contributed to the present state of depression. If the lessons learned this year are put to practical use throughout next year, there is every reason to believe that prosperity will supplant depression and a fair profit will be in store for all concerned. At any rate, existing conditions cannot fail to remedy the one remaining unfavorable influence upon the industry's economic structure, namely, unnecessary drilling.



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Texas Proration Equality Hard to Obtain

FORT WORTH, Texas.—Inequalities of proration as applied to various sections in Texas is apparently destined to continue as long as a surplus production exists. The only prorated areas that have had harmony in restricting production are those that limit allowable production to a level that coincides with combined nominations of pipe line companies in such fields. The accompanying table offers striking proof as to the variance in production restrictions, with a comparatively high daily yield per well average in all Southwest Texas prorated areas, and most of the West Texas fields, while the Van field likewise has a high well average.

Proration data contained in the accompanying table was obtained from official reports compiled on or about November 1 by the umpires in their respective districts. Each separate field or district listed in adhering to a fixed plan in arriving at production quotas, with few minor exceptions. North Texas and Central West Texas are the only two important oil areas in the state under proration that are not listed in the table. The latter have umpires at work, but details on the status of proration in a condensed form are not available because of the variance in proration restrictions, which are established by each crude purchasing company on a basis of crude requirements.

State-wide restriction of crude production is working a greater hardship on operators in North and Central West Texas than any other section of the state. These two districts are the principal stronghold of the independent oil producer and small oil company, and as a general rule the latter do not have properties in other sections that have a comparatively high production allowance per well daily. Major companies predominate as producers in the prorated areas that have large production quotas per well, and for this reason are not so adversely affected by small well allowances in North and Central West Texas.

Approximately 23,000 pumping and a few flowing wells are sharing in the current output of 111,500 barrels of daily production permitted in North and Central West Texas, or an average of about 4.85 barrels daily per well. This section of the Mid-Continent is credited with a potential of 155,000 barrels daily by David Donoghue, technical advisor to the central proration committee for Texas, and was producing 142,800 barrels at the close of June. A maximum production quota of 121,000 barrels was assigned the two districts by the Texas Railroad Commission when the letter ordered state-wide proration late in August. However, actual production has been cut below this allowance throughout the 90-day proration period by reason of major and independent crude purchasers having deemed it advisable to curb their takings. Further reductions in crude takings ordered effective late last week and this week by purchasers will require operators to restrict their properties even greater.

Virtually all major pipe line companies operating in Texas have systems throughout North and Central West Texas, while more than a dozen independent refiners are also taking oil. The latter are supplying their requirements largely from properties in districts for a market outlet, and for this reason less than the posted price applies on nearly all crude transactions. Such practices have been protested by larger purchasers without avail, and may be partially responsible for some of the major companies gradually withdrawing from North Texas in particular as important crude buyers. Recent reduction of Mid-Continent crude prices has not changed the attitude of these majors towards North Texas crudes.

Texas Panhandle operators are receiving an average allowance of 57.1 barrels oil daily per well, with Gray County leading on an average of 64.61 barrels daily per well. This county has one semi-wildcat producer that is allowed 4706 barrels daily through having registered a potential of 9792 barrels daily on November 1. Failure of a number of small operators and companies in the Texas Panhandle to obtain market relief from major buyers has resulted in the former making affiliations with local refiners and crude brokers that involves the sale of oil below posted price.

Below 12 Barrels, Prorated

Oil wells in the Panhandle are exempt from proration when producing 12 barrels or less per day. There are 703

LATEST PRORATION DATA ON TEXAS NEW MEXICO FIELDS

	No. Wells	Official Daily Pot'l Production	Maximum Daily Prod. Allowance	Percentage of Pot'l Prod. Allowed	Daily average yield per Well
Texas Panhandle					
Gray County ..	722	87,245	46,648	53.47	64.61
Hutchinson Co..	959	22,557	15,528	68.84	16.19
Carson County..	233	10,978	6,611	60.22	28.37
Moore County..	21	903	554	61.35	26.38
Wheeler County	44	762	568	74.54	12.91
Potter County .	1	7	7	100.00	7.00
Total	1,980	122,452	69,916	35.31	57.10
West Texas					
Yates	399	5,500,816	100,000	1.82	250.63
Crane-Upton ...	584	46,833	29,000	61.92	49.66
Howard-Glasscock Dist., 3000-ft wells	95	17,354	6,869	39.58	72.31
2500-ft. wells .	52	7,897	3,410	43.18	65.58
2200-ft. wells .	85	51,750	12,242	23.65	144.02
1800-1300-ft. wells	302	8,377	4,145	49.48	13.73
Total	534	85,378	26,666	31.23	49.93
Winkler County.	534	126,562	60,000	47.41	112.36
Ector County ..	74	37,141	6,000	16.15	81.08
Total	2,125	5,796,730	221,666	3.82	104.31
Central East Texas					
Van	150	299,333[1]	27,335	9.13	182.23
Southwest Texas					
Darst Creek	210	171,378[2]	30,309	17.68	144.33
Salt Flat	320	21,180[2]	16,944	80.00	52.95
Pettus Townsite	15	11,408	4,500	39.45	300.00
New Mexico					
Hobbs	114	901,255	31,300	3.47	274.56

[1]Potential through 11/16-inch choke.
[2]Potential as of October 12.
[3]Potential as of August 4.

wells rated at a combined output of 4595 barrels daily that are covered by this exemption. Hutchinson County s credited with having 521 wells of this classification, or more than 50 per cent of all wells in the county. Gray County has 101 marginal wells that yield only 600 barrels oil daily. More than 100 wells in the district are without pipe line connections, or market relief in any form.

Marginal quotas in the North and Central West Texas district were fixed at six, 12 and 20 barrels daily per well, based on the depth of the oil horizon, by the commission, but only a few of the general crude buyers are permitting their connections such an allowance. All connections on the Continental Oil Company's pipe line system are rationed out two and one-half barrels daily per well, while Prairie Oil & Gas Company has lately ordered its marginal quotas cut to 50 per cent of that originally intended. Humble Oil & Refining Company has announced that in a number of fields its marginal allowance would be reduced to enable the company to purchase less oil beginning November 27.

Proration is running smoother in West Texas restricted areas, and with few exceptions all operators in a given field bear the same production restrictions. The Crane-Upton district is on a 12-barrel margin basis, with all larger wells prorated on total lease potential. In the latter area, Gulf Production Company is prorating only wells on the north four sections of its McElroy ranch property. This district is allowed to average 49.66 barrels per well daily, with 584 wells on production.

The Yates field is generally accepted as being the birthplace of systematic proration, and with a production allowance of 100,000 barrels daily the 399 wells in the field average 250.63 barrels per well daily. Due to pyramiding of potential production, the Yates field is now credited with an estimated output of 5,500,816 barrels daily, but this figure is generally discounted to a large extent when calculating possible production of the field. Winkler County's 534 pumping and flowing wells are likewise enjoying a high average daily production quota per well. Allowable production was cut from 80,000 to 60,000 barrels daily at the beginning of new proration period on November 5, but actual production was nearer the smaller figure at the time of the cut.

The Howard-Glasscock County district is prorated according to well depths and a marginal allowance of 12 barrels per well daily is permitted producers in the two shallow horizons, while wells producing from the three lime horizons are exempt from restrictions when yielding less than 50 barrels daily. The 2000-foot lime is the most important source of production in the district and wells are permitted to average 144.02 barrels daily during the current period.

Ector's Market Cut in Half

Market outlet for Ector County's wells has been cut in half in recent months, and beginning with the November 1 period the allowance is limited to 6000 barrels daily, or an average of 81.08 barrels daily per well.

Prorated areas in West Texas are almost entirely free of distressed price oil, and excellent co-operation is being given by operators to assure the success of the plans, which were introduced prior to statewide restrictions. Invariably production allowances in these fields and districts are designed to coincide with current market requirements. Popularity of the crude with purchasers is attested by the size of the well averages.

Van field is the only prorated area in the state that is likely to enjoy a greater daily production allowance within the next few months. This field is averaging 182.23 barrels daily per well, and is limited to 27,500 barrels daily. However, Humble Pipe Line Company is nearing completion on a 10-inch trunk line to provide a second market outlet, and it is quite probable that the field's quota will be allevated at a high level about January 1. The 150 flowing and pumping wells at Van registered a combined potential of 299,333 barrels daily at close of October, but all wells were restricted to 11/16 inch chokes in arriving at the above figures. Open flow potential of the field is generally accepted as being near the 1,000,000 barrel mark. The unit method of development is carried out at Van, except on the east side of the field, and only two independent operators have production.

Considering proration allowances that prevail in various flush sections of the state, the operators in the Darst Creek field are favored with a reasonable quota. This field was assigned a maximum production of 30,309 barrels daily from 210 wells during the November period, and on this basis the average well will produce 144.33 barrels daily. The Pettus Townsite field drew an average well allowance of 300 barrels daily for the November period. Salt Flat has been largely depleted of its flush output, and wells are allowed to produce within 80 per cent of their potentials, which were taken early last August.

Hobbs field, New Mexico, is closely related to the West Texas crude market situation because of the latter area sharing market outlet. The former is allowed to produce an average of 274.56 barrels daily per well, or 3.47 per cent of the potential, which is estimated at 901,255 barrels daily on open-flow gauges.

Winkler Proration Votes For Another Six Months

SAN ANGELO, Texas.—Confronted with an expiring lease on a solid block of 24 sections, Magnolia Petroleum Company was partially successful during the past week in establishing oil production on its Geo. Sealy ranch holdings in Ward County after shooting lime formation at 3036-44 feet. When shot with 30 quarts this horizon yielded eight barrels of 25.6 gravity oil and about 750,000 cubic feet of gas. This well is located near the center of Section 46, block "F", and about 3½ miles west of the nearest production in the Gulf-O'Brien field, which is producing flowing wells from the same horizon.

Gulf Production Company's Hutchings 4, located near the center of the south line of Section 7, block "O", and on the extreme south end of the Gulf-O'Brien field, tested 14,000,000 cubic feet of gas with light spray of oil when unloaded partially while drilling lime at 3102 feet. This outpost well proved good for 50 barrels oil and 12,000,000 cubic feet of gas in the upper section of the lime, which began schowing production at 2565 feet. Rotary was installed at 2898 feet because of heavy gas flow. The outcome of this well is being watched by owners of University of Texas leases, located in the adjoining section to the west, as a big producer will lead to the development of the latter. Hutchings 4 began showing oil and gas in July, but progress has been slow in making the last 500 feet of hole.

Extension of the Winkler County proration plan for another six months period was voted unanimously by operators on November 5, and allowable production was ordered reduced from 80,000 to 60,000 barrels daily beginning on the latter date. However, actual production in the county in recent weeks has hardly equalled the reduced allowance, so restrictions are mostly confined to the barring of gas lift and excessive swabbing of wells. Revival of activity on the south end of the Leck-Daugherty pool, located in

the northern portion of the county, has apparently been checked by the poor showing made by Empire Gas & Fuel Company's Daugherty 1-C, which flowed about 150 barrels oil plus 95 per cent sulphur water when drilled to 3089 feet.

Minor oil showings encountered in Delaware sand formation by The California Company's wildcat test on the Kloh-Rumsey fee, Reeves County, failed to increase when the hole was shot with 150 quarts at 4202-40 feet, with a total depth of 4246 feet. The hole filled 3500 feet with salt water and about 100 feet with oil after the shot. Attractive production is gained from this horizon in the Wheat field, Loving County, and from one producer in northwestern New Mexico.

Railroad Commission's Right to Prorate Production on Trial

AUSTIN, Texas.—The Texas Railroad Commission's authority to effect a state-wide oil curtailment order is at stake as hearing began in district court, Monday, November 10, on a motion by the state to dissolve the temporary injunction recently secured by Danciger Oil & Refining Company restraining enforcement of the commission's order.

Disposition of this case will decide the fate of at least two and perhaps three like cases pending in court. Two, like the Danciger case, are directed at the state proration order; the third attacks proration only in one field.

The hearing resolved itself into a test of the commission's authority to issue a blanket order, rather than a hearing of the merits or demerits of the appeal by Danciger Oil & Refining Company.

The state, represented by Assistant Attorney General Dewey Lawrence and Heinz Baker, attorney for Humble Oil & Refining Company, built its case around the asserted right of the railroad commission to exercise a power of police for the public welfare, regardless of the result to the individual. Whatever contracts the plaintiff corporation might have had, it was pointed out, were immaterial since private rights should bow to public welfare.

Attorney Charles Black replied for the plaintiff, and refuted their statements, pointing out that the railroad commission could not act as a judicial body unless it carefully considered the evidence placed before it and acted reasonably thereon. He cited numerous cases from the supreme court to verify this statement, and showed instances where the decisions of such bodies had been set aside by the courts when they had failed to act on the evidence as presented to them.

He declared further that the injunction could not be dissolved, pending suit, as the statute specifically stated that the oil operators should come into the district court of Travis County to present reasons and testimony to show why they should not have such orders enforced against them, pending suits by the commission, and that until such suit was determined and finally adjudicated, there was no cause for dissolution of said injunction.

He explained that if this was not done, the plaintiff would already have lost his case before it was adjudicated in the courts, as the judge hearing this petition would have rendered the decision in the case on its merits and they would have admitted it lost; therefore, there would be no case for them to carry further into the courts. He pointed out that it was the duty of the court to grant such injunction, unless evidence was shown that the plaintiff was not acting in good faith, or that the laws of conservation had not been complied with and actual waste on plaintiff's leases was taking place. This had not even been argued by defendant railroad commission, and therefore could not enter into this case.

It appears probable several days will be taken to hear all the arguments strictly on the questions of law involved, and the suit will be tried on its merits after the court passes upon the motion to dissolve.

Cosden Receivership Further Depresses Oil Stocks

New York, N. Y.—Appointment of receivers for Cosden Oil Company, on suit by the Merrick Drilling Company, had a further demoralizing effect upon the oil stocks early this week and caused many issues to react to new low levels. Cosden Oil Company admitted its inability to pay current debts, although having ample assets. Total assets of the company were listed at $12,812,000 and liabilities, exclusive of corporate stock, $4,330,000; current assets $2,159,000 and current liabilities $1,787,000. The receivers named were former Judge Hugh M. Morris of Wilmington, Del., and George N. Moore of Fort Worth, Texas. Cosden Oil Company was formed in 1928 and the $5,000,000 corporation organized by Joshua S. Cosden was looked upon by the industry as a "comeback" after Mr. Cosden had lost his former control of the old Cosden Company, now the Mid-Continent Petroleum Corporation. The receivership is said to have been brought about as a result of the recent failure of J. A. Sisto and Company, New York Stock Exchange firm, which had done the financing for the present Cosden Company.

Apparently, the Cosden receivership furnished additional ammunition for the bear element in Wall Street and further success attended their efforts to depress the oil shares. Standard Oil Company of New Jersey common stock broke through the price of $50 a share, to a new low of 49, while numerous other prominent issues were driven to new lows on the present decline. Some idea of what has taken place since the precipitate decline was initiated on both the New York Stock Exchange and the New York Curb can be gained from a perusal of the following tabulation showing the highs of last year and the lows of this week for a selected group of prominent oil shares traded on these exchanges:

	1929 High	Low of Nov. 10, 1930	Points Decline
Atlantic Refining Company	77⅞	18⅝	59¼
Barnsdall Corporation	49⅞	12⅝	36¼
Cosden Oil	135	1¾	133¼
Continental Oil (Delaware)	37¾	10	27¾
Gulf Oil Corporation	209	75	134
Humble Oil and Refining Co.	128	69⅞	58⅛
Houston Oil Company	109	33⅛	75⅞
Mid-Continent Petroleum	39⅞	15½	24⅜
Phillips Petroleum	47	16⅜	30⅝
Prairie Oil and Gas Co.	65⅝	20⅛	45½
Pure Oil Company	30¾	10¾	20
Richfield Oil Co.	49⅝	5⅞	43¾
Standard Oil Co. (Calif.)	81⅞	49¼	32⅝
Standard Oil Co. (Ind.)	103¼	25⅞	77⅜
Standard Oil Co. (N. J.)	83	49	34
Standard Oil Co. (N. Y.)	48⅛	25	23⅛
Sinclair Consolidated	45	11½	33½
Skelly Oil Co.	46½	11⅛	35⅜
Texas Corporation	71⅞	35	36⅞
Tidewater-Associated	23½	8¼	15¼
Union Oil Co. of Calif.	57	25½	31½

Analysis of financial statements for some of the above companies shows that present market quotations are somewhat below the actual book value of these stocks and, in some instances, the present price represents a total value for outstanding stock that is actually below the cash assets per share. As result of the apparent over-working of depression factors, directed particularly at the oil shares by the bear element, many oil stocks are now selling at ridiculously low prices. In fact, it is evident that many of the above and other oil stocks are a "bargain" at present depressed levels.

Oklahoma--Kansas Field Notes

FLOYD L. SWINDELL, *Staff Representative, Tulsa, Oklahoma*

Announce 20 New Locations In Kansas Fields for Week

TULSA.—Twenty new locations were announced in Kansas during the week ending November 8, as compared with 17 for the week before. McPherson County led with seven, Greenwood County had three, and Marion, Coffey, Harvey, Stevens, Morton, Ness, Barton, Rice, Stafford and Rush Counties had one each. Two of the locations in McPherson County were in township 19s, range 1w, northeast and northwest of Mid-Kansas Oil and Gas Company's Stephens 1, SW NE, Section 33-19s-1w, which was completed recently for an initial flow of 21 to 25 barrels per hour from pay in the lime topped at 3407 feet.

National Refining Company's Murdock 2, SEc, Section 18-27s-2e, in the northeast edge of the Eastborough pool, Sedgwick County, swabbed 2210 barrels, 23 feet in the "Chat" topped at 2937 feet. Derby Oil Company's Eastborough Estates, in the platted area of Section 19-27s-2e, topped the "Chat" at 2960 feet and swabbed 2355 barrels when 11 feet in. Fisher and Lauck's Trustee 8, SE, Section 19-27s-2e, is pumping about 30 barrels per hour from "Chat" topped at 2937 feet and drilled to a total depth of 2963 feet. Same company's Trustee 7, NE NW SE, Section 19-27s-2e, had 2500 feet of oil and water in the hole when 12 feet into the Wilcox at 3283 feet.

Potential from 29 wells in the Eastborough pool for November was estimated at 23,660 barrels daily. Derby Oil Company, with seven wells, has a potential of 5500 barrels; Fisher and Lauck, with eight wells, 4000 barrels and Vickers Petroleum Company and George Hinkle, have 2500 barrels each. Derby Oil Company is running 3700 barrels daily and has 1800 barrels shut in. No specific agreement has been reached as to proration for the pool but at present it is produced on a 60 per cent of potential basis. Market outlet is the controlling factor.

T. B. Slick's Heiken 1, NWc, Section 25-17s-10w, recently completed discovery well, swabbed 359 barrels in four hours and 30 minutes when three feet in the pay topped at 3243 feet. The pay zone is in the siliceous lime which was topped at 3209 feet. The new well is estimated at 2000 barrels initially but will be closed in for an indefinite period due to lack of outlet.

Gypsy Oil Company has announced location for its Coleman 1, CSW NE, Section 25-17s-25w, rank wildcat in western Ness County. The test is to be drilled to 5000 feet and is in an area where several surface structures have been mapped. It is about three miles north of Continental Oil Company's Aldrich 1, NEc SE, Section 7-18s-25w, which produced 10 barrels per hour from conglomerate logged between 4828 and 4836 feet, and nine miles northeast of Alamoto Dome Company's Dickinson 1, CS½, Section 11-18s-27w, which was dry at a total depth of 3725 feet. Community Oil Company's Stucker 1, SEc NW Section 1-17s-26w, approximately five miles north of the former 3, was a dry hole at 2910 feet.

Tulsa Geologists Hear Interesting Paper on Kansas

Tulsa, Oklahoma.—At a special meeting held Monday evening, November 3, members and guests of the Tulsa Geological Society heard a talk on, "The Pre-Pennsylvanian Unconformities of Central Kansas," by James R. Daniels, geologist for Continental Oil Company of Ponca City. The talk was illustrated by several cross-sections and a map showing location of the sections. Dr. J. J. Galloway, on sabbatical leave from the Department of Paleontology of Columbia University and now acting as paleontologist for Gypsy Oil Company, commented on conditions in central Kansas and stated that in his belief, the geology of the region could have been worked on the principle of eustatic movements in the absence of any information through the medium of well logs. The question of age and location of Misener sand was raised and Mr. Daniels replied that no prognostication could be made as to its location but that the usual occurrence was in depressions near the pre-Pennsylvanian outcrop of Silurian beds.

Oklahoma City Production Extended Two Ways

OKLAHOMA CITY.—The Oklahoma City pool was extended on both ends during the past week, one completion being at a location which was expected to produce from the Wilcox in the north end and the other, a test which had been practically relegated to the dry hole column. Jone Drilling Company and Blackwell Oil and Gas Company's Scruggs 1, CSE NE SE, Section 35-12n-3w, three-eights of a mile north of production, started cutting out connections after being bailed down 1800 feet and was shut in before testing. It is estimated at 6000 barrels of oil and 100,000,000 gas from a total depth of 6398 feet.

Continental Oil Company's Sudik 5, SW NW NE, Section 6-10n-2w, was estimated at 2000 barrels, from 209 feet of Simpson and Wilcox. Top of the Wilcox was at 6670 feet and total depth at 6694 feet. This is an east offset to Indian Territory Illuminating Oil Company's Reynolds 2, which will be shot for final testing before abandoning. It had the Wilcox from 6688 to 6705 feet and is bottomed at 6777 feet. Continental Oil Company's new well is also a south offset to its Number 1 well on the same farm, which produced 10,970 barrels during the first 22¼ hours.

Indian Territory Illuminating Oil Company's, Adeline Billen 1, NE SE NE, second producer in Section 26-11n-3w, flowed 80 barrels the first hour after being cleaned out with cable tools. When bailed down after the rotary completion it failed to flow. Total depth is 6352 feet in sand.

T. B. Slick interests are moving in material for Whitfield 1, SW SE SE Section 34-12n-3w, southeast offset to the same interests' Wespaco 1, new extensioner which flowed 2242 barrels the first hour.

Indian Territory Illuminating Oil Company's Theimer 8,

NW SE Section 1-11n-3w, south offset to Empire Oil and Refining Company's Gustine 1, produced only 169 barrels in eight hours after being shot with 35 quarts. The well was originally drilled to 6757 feet where it encountered water and was plugged back to 6440 feet. Production is coming from a sand between 6310 and 6340 feet. Slick and Atkinson's T. M. Townsend 2, NE SE NW Section 1-11n-3w, one location west and two locations north of the Theimer 8, produced 10 barrels in 15 minutes after being shot with 150 quarts between 6512 and 6549 feet. It had no production prior to the shot.

Greater Seminole Output Nears Half Million

TULSA, Oklahoma.—On November 1, the greater Seminole area had produced in excess of 475,000,000 barrels of high gravity oil over a period of approximately 4½ years. Status of the various pools as of November 3 was as follows:

Pool—	Locations	Rigs	Drilling Wells	Producing Wells	Daily Prod.	Average Per Well
St. Louis	.	1	2	482	22,219	46.0
Little River	1	.	.	370	22,764	61.5
E. Little River	.	.	.	85	12,101	142.3
Carr City	2	.	7	71	9,307	131.0
Maud	.	.	.	135	3,041	22.5
Mission	.	.		92	5,424	58.9
Bowlegs	.	.	.	278	13,380	48.1
Earlsboro	.	2	2	283	14,953	52.8
S. Earlsboro	.	.	.	27	8,657	320.6
E. Earlsboro	.	.	1	158	14,475	91.6
Seminole	.	1	1	259	13,402	51.3
E. Seminole	.	.	.	33	2,091	63.3
Searight	.	1	.	86	6,860	79.7
Totals	3	5	13	2,359	148,674	63.0

The 7n-4e area again demonstrated the variable nature of Hunton lime when Continental Oil Company's Wallgren 1, SEc, Section 4, had the top of the lime at 3765 feet, 90 feet structurally lower than Atlantic Oil Producing Company's Thomas 1, its south offset. The Wallgren well was drilled to a total depth of 3880 feet still in lime and was swabbing between 15 and 25 barrels per hour without bailing down and is apparently a better well than the Thomas, which produced only 178 barrels initially from a total depth of 3941 feet in Sylvan shale. Bottom of the Hunton was at 3937 feet. Top of the Hunton in this area is exceptionally hazardous as a marker for structural contouring because of the unconformity which marks the top. Wells may have the top of the lime high and encounter the Wilcox structurally lower than wells which have been comparatively low on the top of the Hunton.

The Texas Company et al's Tulsey-Knight 1, NE NW SW, Section 29-9n-6e, in the new area west of Seminole City, produced 1330 barrels in 18 hours from 29 feet of Wilcox sand after being shot with 16 quarts, total depth is at 4139 feet. This well is a west offset to Amerada Petroleum Company and Dixie Oil Company's Chase 1, which had the Wilcox from 4087 to 4116 feet and produced 1560 barrels the first 13½ hours after being shot with 20 quarts.

Gypsy Oil Company's Tiger 1, SE SW NW, Section 3-8n-5e, which was estimated as a 1000-barrel well in the Hunton lime, has been producing from 3200 to 3400 barrels per 24 hours on gas lift. It is the first Hunton lime producer in the Carr City area.

Prairie Oil and Gas Company's Ball 1, NW SW SE, Section 27-6n-3e, east offset to Westheimer and Daube's Johnson, one mile southwest of production in the Wanette pool, had the top of the Belle City lime at 2395 feet and was drilling below 3000 feet at last report. Present development indicates that the Johnson 1, which was a 60-barrel well initially, is not on the same structural high with the main pool. Reports at the time the Johnson well was completed stated that it was approximately 40 feet structurally lower than Hull Oil Company's Swan 1, NE SE SE, Section 22, in the south edge of the pool.

Tatums Extension Well Now Drilling Below 4012 Feet

TULSA.—Magnolia Petroleum Company has resumed drilling at its I. E. Harmon 1, NW NW SW Section 28-1s-2w, about two miles southeast of the Tatums pool and five miles east of the Sholom Alechem pool. Operators have had considerable difficulty in this test, having recently completed a fishing job for drill pipe and rock bit, at 4012 feet. It is now drilling below 4060 feet. Accumulation of oil in this area has been found almost entirely in long, narrow, sharply dipping structures paralleling the nearby Arbuckle Uplift, which trends northwest by southeast. The Harmon well is in line with a trend including the Robberson pool, in Garvin County, and the Tatums pool, in Carter County.

M. A. Neff et al are drilling below 940 feet in their Fairis 1, CS½ S½, Section 29-6s-7e, Bryan County wildcat, about two miles south of the town of Aylesworth. Small showings of oil have been encountered at 765 to 773 feet and 885 to 888 feet. This test is located in a Cretaceous area which has had a large number of tests but few, if any, have been drilled deeply enough to conclusively test the Pennsylvanian rocks.

D. H. Curry et al are drilling below 1150 feet in their Elmer Ward 1, NW NW SW SE, Section 15-5s-6e, about six miles northeast of Madill, in Marshall County. The location is approximately four miles northeast of the old Madill pool, which has been producing small amounts of high gravity oil from the Trinity sand since 1906.

Harris and McNeil's Parker 1, SW SE NE SE, Section 11-2s-8w, recent completion northwest of the Comanche pool, swabbed 156 barrels of oil during the initial 36-hour gauge from 2051 feet. Sand was encountered from 2049 to 2053 feet. It is not known whether this is the "1800-foot" sand of the pool proper or a deeper zone. Eight wells in the Comanche district are due to be completed within the next week or 10 days. The new area southeast of the pool has two wells nearing the 1500-foot sand where George Pace et al recently completed their Dilley 3, SE NE SW, Section 27-2s-7w, as 100 barrels pumper from sand at 1498 to 1506 feet.

The Comanche pool was discovered in August, 1918, when Comanche Petroleum Company completed a well in Section 20-2s-7w, for 20,000,000 cubic feet of gas from a sand between 1286 and 1324 feet. During the latter part of 1918 and the early part of 1919, three sands, the 800-foot gas sand, the Wilson sand, and the 1800-foot sand, were developed. Activities of the present year have revealed deeper production over parts of the field and are showing good for several extensions to the old producing area.

M. G. R. Oil Company's Mitchell 2, SE SE SE, Section 24-1s-3w, Tatums pool in Carter County, swabbed 817 barrels during the initial 24-hour gauge from a series of sands logged between 2191 and 2375 feet. Carter Oil Company is preparing to move in material for its John Hopson 1, NE NE NE, Section 25-1s-3w, south offset to the M. G. R., Mitchell 2.

There are now five drilling wells, three shut down, and four wells waiting for cement to set.

North and West Texas Field Notes

H. H. KING, *Staff Representative, Fort Worth, Texas*

Commission to Seek Relief for Panhandle Operators

AMARILLO, Texas.—Renewed efforts to obtain pipe line and market relief for the numerous leases and wells in the Texas Panhandle district that are shut in for lack of connections will be waged by the Texas Railroad Commission at a special meeting of operators and pipe line companies to be held in Fort Worth on November 15. The meeting has been set for 10 a. m. at the Texas Hotel. Other matters to be considered at this hearing will involve the extension of proration to March 1, 1931, and also the creation of a separate proration plan for the recently established flush oil area on the Sullivan land in western Gray County.

The Panhandle district proration advisory committee and H. J. Corcoran, umpire, have been at work lately in drafting a tentative plan to provide relief for shutin wells, and same will be submitted to the commission at the Fort Worth meeting. This plan will govern the allocation of properties for pipe line connections, but is not intended to disturb present affiliations of producers and pipe line companies.

Developments in the Sullivan area, Gray County, during the present week may determine whether the 15 tests now drilling within two miles of the prolific discovery well shall be seggregated and assigned a separate proration plan. Taconian Oil Company (now Gray-Duncan-Harrell and Crenshaw) Sullivan 1 opened the Sullivan area in September at 2990 feet, and was credited with a daily potential flow of 9792 barrels late in October. This well earned a production quota of 4706 barrels daily during the November 1-15 proration period, and the new owners have provided market outlet to withdraw such a volume of oil. Should the area yield a number of such heavy producers all other oil producers in Gray County would suffer big losses on allowable production as a consequence.

Indications are that nearby drilling tests will not duplicate the pioneer well in production performance, as Empire Gas & Fuel Company's Sullivan 1, an east offset, was drilling at 2995 feet late last week in a dry hole. The latter was carrying about one million cubic feet dry gas from lime at 2775 feet. Magnolia Petroleum Company's Latham 1, a west offset to the big producer, had resumed drilling at 2600 feet with cable tools. Skelly Oil Company's H. Heitholt 1 developed 6,000,000 cubic feet of gas at 2664 feet, and at last reports was drilling below 2780 feet. There are six other nearby tests that have passed the 2000-foot level. H. H. Sanders, Amarillo, and others are drilling two tests on the Sullivan 160-acre tract, which was formerly credited to Danciger Oil & Refining Company.

Shamrock Oil & Gas Company, Amarillo, provided a second producer in the southwest extension area of the Dumas field, Moore County, last week by completing its W. Coffee 1 with an initial flow of 180 barrels oil during first 12-hour gauge from lime at 3202-05 feet. This well is located in the northeast corner of the east 160-acres of Section 355, Block 44, H&TC Ry. Survey, and is a south offset to the same company's Brumley 1, which was completed in September making 150 barrels on a 12-hour test with gas lift at 3435-67 feet. A sharp contrast in producing horizons prevails in these two wells. Guf Production Company is rigging up rotary to drill to the southwest of the above producers, having made location at the center of SE Section 312, Block 44. It is reported that B. Dore tract on which this new test is to be drilled is a short term lease.

North Texas Gasoline Market Looking Up With Demand

Fort Worth, Texas.—A firmer price tone has been imparted to the North Texas gasoline market as result of increased purchases by domestic jobbers during November, with quitations on the U. S. motor ranging from 4½ to five cents per gallon. Some doubt exists as to whether prices will be upheld for any appreciable period, as jobbers are beginning to fill current requirements and are sure to withdraw from active trading by middle of November.

North Texas refiners are operating on the cheapest crude arrangement that has ever been their lot, and are quite apt to renew their gasoline price shading in order to force a market outlet.

An even greater supply of distressed priced crude is soon to become available for North Texas plant owners within convenient reach of their refineries, as major crude purchasers in the district have announced that their takings will be curbed further. Refiners are now supplying their crude requirements at 10 to 30 cents per barrel below posted prices, and are showing a disposition to allow current returns from refined products determine the market price for their crude. Such condition heralds lower gasoline prices during the winter months.

Cosden Receivers Appointed

Fort Worth, Texas.—Cosden Oil Company, which operates extensively in Texas as a producer and refiner with headquarters at Fort Worth, was placed in receivership November 10 as result of suit filed by the Merrick Drilling Company, Wichita Falls, in Federal Court at Wilmington, Delaware. The latter court appointed former Judge Hugh M. Morris of Wilmington and George N. Moore, Fort Worth, vice-president Cosden Oil Company, as co-receivers. Merrick Drilling Company also filed petition on November 10 in Federal District Court at Fort Worth for the appointment of an ancillary receiver to preserve the assets of the Cosden Oil Company. The drilling concern alleges the defendant owes $17,735.50 for the drilling of a well recently in San Patricio County, Texas.

Producing properties are held by Cosden Oil Company in Wilbarger, Ector, Howard and Bee Counties, and a refinery near Big Spring, Texas, rated at 15,000 barrels daily capacity. The company operates in Oklahoma as the J. S. Cosden Company, Inc., and the latter has producing properties and a natural gasoline plant.

J. S. Cosden, a prominent figure in Mid-Continent oil circles, is president of Cosden Oil Company, and has been confined by illness until recently while visiting in the East. A. G. Reed, vice-president, is confined at a Fort Worth hospital as result of injuries received October 17 in an automobile mishap.

EAST CENTRAL TEXAS FIELDS

Joiner Future Depends on Pending Completions

TYLER, Texas.—An aggressive development program is assured for the Joiner pool in northwestern Rusk County should a few of the tests now approaching the expected oil horizon furnish commercial producers. In the face of a comparatively small crude yield from the lone producer in the area, operators have launched drilling operations on eight tests, while eight additional locations have been equipped with derricks and owners of same in most instances are marking time. A few completions, even though small in production, will be the starting signal for the latter group of locations, then others are quite certain to follow. With one exception, independent operators are sponsoring all the development work underway and proposed. Larger companies have been skeptical of the area, and have confined their lease buying mostly to moderate priced acreage outside the center of activity.

Testing of the first operation to reach the Joiner oil horizon is slated to take place this week, and this will be done by Arkansas Fuel Oil Company's J. A. Worrell (38-acre lease) 1, located about one-half mile southeast of the discovery well. Worrell 1 was drilled to 3600 feet early last week, and cemented 6⅝-inch casing at 3540 feet after coring slight saturation in broken sand and shale formations. Joiner and associates' discovery well on the Daisy Bradford farm was drilled to 3592 feet prior to running pipe, and was completed October 3 at the latter depth with a peak output of 458 barrels about one week after being placed on production.

Condensed log of Arkansas Fuel Oil Company's Worrell 1 is listed below in brief form, with surface elevation of 412 feet:

2490-2510 Pecan chalk.	3566-3569 Gummy shale.
3439-.... Austin chalk.	3569-3581 Broken shale, streak sand.
3538-3547 Broken chalk, sandy shale.	3581-3590 Hard sandy-shale.
3547-3557 Hard oil sand.	3590-3595 Gummy shale.
3557-3566 Sandy-shale.	3595-3600 Sandy-shale.

L. L. Smith of Refugio, Texas, and associates' test on the Cooper-Worrell five-acre lease, located northeast of the producer, will probably provide the second completion for the area, as this operation was drilling below 3400 feet early this week. Frank Foster and Deep Rock Oil Company's Ashby (60-acre) 1, located west by south of the producer, was drilling in hard chalk at 2687 feet early this week, while Stroube & Stroube's W. H. Frederick 1 was drilling below 2500 feet. H. L. Hunt et al's Daisy Bradford (17-acres) 1 is drilling below 2660 feet. Geo. D. "Tex" Lloyd et al's Camp (five acres) 1, and Anderson-Kimbrough & Miller's Bradford 1 have drilled past the 1500-foot level. C. Rosenfield and others' Pinkston 1 is idle at 2015 feet.

Wainwright-West Oils, Ltd., of Toronto, Canada, is a new invador of the Joiner area, and materials were being moved in early this week to proceed with the drilling of a test on the Geo. Moore 7½-acre lease, located about 2000 feet northeast of the discovery well. P. D. Bowlen, president of the company, awarded the drilling contract to R. H. Dearing & Sons, Dallas. Dan Auld of Kerrville, Texas, is reported to have acquired Peyton Brothers' five-acre lease on the Worrell-Cooper farm, and will start development work promptly.

Averages 213 Barrels

Total crude production from Rusk County's lone producer on actual gauges since its first flow on October 3 to 7 a.m., November 7, amounted to 5900 barrels, with some additional production lost in pits. During the week ending November 7 the well swabbed and flowed an average of 213 barrels of 38 gravity oil daily. Repeated swabbing of the well has cut down the natural flowing capacity. A ready market for all oil produced is now available locally in supplying fuel for heavy rotaries operating on nearby leases, and Joiner and associates are receiving $1.10 per barrel at the well.

Confidence that an oil field will materialize in the Joiner area has been shown by H. L. Hunt, El Dorado, Arkansas, operator, and associates, as this group have completed a four-inch pipe line from a point near the discovery well to a 10-car capacity tank rack in northwestern part of Geo. W. Guthrie Survey, on the I. & G. N. (Henderson & Overton) Railroal, a distance of about three miles. This installation assures transportation for production that may result from tests now nearing completion.

McGinley Corporation, Fort Worth, contributed one of the trio of new wildcats ordered drilled in Central East Texas during the past week. This concern has assembled a block of 5000 acres in central Upshur County, and is rigging up rotary to drill 660 feet out of the south end of the Reeves-Truitt 47-acre tract, L. B. Brown Survey. F. P. Lesh and C. McCall, Nocona, Texas, contractors, have contracted to drill to 3000 feet, with provisions made to go to 4000 feet, if deemed advisable. In Delta County, Worthington and Stedham have made location to drill 776 feet from the west and 150 feet from the south lines of W. H. Dejernett 32-acre farm, E. Chick Survey, located about four miles east of Commerce. These operators have a block of about 4500 acres, lying mostly in the southwest corner of Delta County, and extending across into northeastern Hunt County. Van Oil Association has announced that a test will be drilled about six miles southwest of Grand Saline, Van Zandt County, and location has been made 1000 feet north and 200 feet west of the southeast corner of the Tankersley farm, L. Landers Survey.

Plugging orders have been issued on D. Harold Byrd et al's wildcat test on the C. H. Morris farm, P. Piles Survey, Van Zandt County, with the hole bottomed in hard chalk at 4721 feet. In the same county, L. G. Priest and others' Blanch Blewett 1, E. Porter Survey, has pulled casing to plug after proving dry on swabbing test at 3212 feet. This wildcat was cased and equipped with a liner on the strength of traces of gas, but it proved to be a false alarm. T. W. Moore of Dallas and associates' W. A. Kellam 1, Jessie Russell Survey, is a third recent disappointment for Van Zandt County, as the test is drilling below 3900 feet and apparently low on structure. It logged Pecan chalk at 2782-2924 feet, with a surface elevation of 515 feet, but will be carried to 4500 feet. In northeastern Kaufman County, Otto R. Winter et al's John Barrow 1, R. A. Terrell Survey, has been filled with mud and abandoned with salt water in Woodbine sand. This wildcat was drilled to 3518 feet. The surface pipe will be left in the hole, as a Trinity sand test may be attempted later.

Efforts being waged by Pure Oil Company to extend the productive limits of the Van field proved unsuccessful on

two outpost locations during the past week. This company's A. G. Tunnell 1, located in northeast corner of 50-acre tract, Mund Gross Survey, apparently has added another failure to the north end of the unitized area, as it tested only a small volume of oil and gas with salt water in Woodbine sand at 3028 feet last week. The test was drilling in sandy-shale at 3226 feet November 10. Pure Oil Company's I. W. Thompson 1, located about 2000 feet due west of the nearest production on the southwest side of the field, was in a doubtful class early this week, and was coring at 3138 feet. The latter is located on 95-acre lease, Mund Gross Survey, and logged top of Austin chalk at 2785 feet. In contrast to this structurally low test, Pure Oil Company's R. E. Cade (50-acre lease) 1, located about half mile to the south, caught the key formations normal, and has cemented seven-inch pipe on top of Woodbine at 2668 feet. On the south end of the unitized area, Pure Oil Company's Mertie Elliott 1, A. H. Wiley Survey, failed to flow natural after repeated swabbing tests in Woodbine sand at 2933 feet, and the well will probably be placed on pump.

Three completions credited to the Van field during the past week were scored by Pure Oil Company, including two outside the unitized area. All were inside locations, and furnished averaged sized producers. Pure Oil Company began rigging up on three new tests, and The Texas Company drew one more location on its R. A. Tunnell 100-acre lease, which has two tests ready to complete.

Texas A. & M. Petroleum Society Elects Officers for the Year

College Station, Texas.—The first meeting of the Petroleum Society of Texas A. & M. College, under the supervision of J. B. Joyce, professor of petroleum production engineering, was held the last week in October for the purpose of electing officers for the club and to outline the policies the organization will follow during the current school year. Officers of the student organization include: W. B. Powers, president; T. S. Austin, vice-president, and T. E. Patrick, secretary-treasurer. A committee of three students consisting of H. Pennington, M. R. Hayes, and Fields was appointed to arrange programs for the various meetings to be held throughout the year. Thomas Pennington was elected correspondent for the club.

The purpose of the club as outlined is to promote a greater interest in the oil industry and to have informal discussions where the scope of the industry may be considered from a practical viewpoint. It is the intention of the organization to have men connected with the oil industry give talks before the society at different meetings during the year. The course in petroleum engineering was initiated in this school in the fall of 1929 and has grown so rapidly that there are now more students enrolled for this division of engineering than in any other branch of engineering in the college. Meetings of the society will be held once each month or more often if the occasion demands. Membership of the Petroleum Society numbers 76 students with possibilities that the number will be greatly increased before the end of the year with additional enrollments in the course at the end of the first semester.

Badger Basin Test Is Wyoming's Deepest

Cody, Wyoming.—The deepest hole ever to be drilled in Wyoming is Resolute Oil Company's wildcat test on the Badger Basin structure, Park County, which is now below 8020 feet. No findings of importance have been reported from the test.

Work On Greasewood Dome Discovery Well Shut Down

Denver, Colorado.—Work has been indefinitely shut down at the discovery well on Greasewood dome structure, in Weld County, northeastern Colorado, and until all is in readiness for its completion with minimum risk and proper disposition of the crude, as well as all leasing matters straightened out, it will not be resumed. Frank Kirchoff of Denver, president of the American National Bank, is directing the affairs of Platte Valley Petroleum Company which drilled the well into production at 6667 feet, presumably just above the Muddy sand which is the first of the Dakota series. A string of 4¾ inch casing is 32 feet off bottom.

Continental Oil Company has a 5000-barrel storage tank up to supplement the two 500-barrel ones and the gunbarrel tank. It is running three tank trucks per day between the well and the Union Pacific railhead at Orchard. Continental Oil Company's arrangement to take the oil is only temporary.

Delay in completing the well has met with much satisfaction on the part of major operators who have taken no protection acreage near the well, and who are now working out the geology of the territory.

The well is producing at the rate of five heads per day, with a total production of about 160 barrels.

Start Second Dry Creek Test

Red Lodge, Montana.—Ohio Oil Company has started its second test for oil on the recently-proved Dry Creek structure, in Carbon County. The company has several locations already made for future tests in the new field, but it is understood that only this one will be drilled before spring. Company's first test on the structure was completed in the gas sand and is being used as a fuel source.

Empire Lease and Royalty Buys Half Interest in Miley Petroleum

Los Angeles, California.—Sale of one-half the outstanding capital stock of the Miley Petroleum Company to the Empire Lease and Royalty Company of Los Angeles was announced this week. Also, Miley Petroleum Company sold to Empire Lease and Royalty Company an undivided one-half interest in 640 acres on the North Dome at Kettleman Hills, thus giving that company a three-quarters interest in that acreage. The two transactions involved slightly more than $2,500,000.

The Kettleman acreage is in four tracts, of which 80 acres of fee land is in the north half of the southwest quarter of Section 16-22-18, 40 acres is in Section 26-21-17, 200 acres is in the west half of Section 14-22-18 and 320 acres is in the west half of Section 24-22-18. Amerada Petroleum Corporation holds development contracts on all four tracts and at least one well is due to be spudded in next July.

This is the second major transaction of this company recently in its policy of acquiring producing properties. It bought the entire properties of State Consolidated Oil Company, a California pioneer, several weeks ago. Empire Lease and Royalty Company will continue its plan of obtaining producing properties through several more deals now pending. The company is capitalized at $5,000,000 and holds about 400,000 acres of leases and royalties scattered over a number of states.

New Mexico and Rocky Mountain Area

New Hobbs Well Nears Record for Field

HOBBS, New Mexico.—Amerada Petroleum Corporation approached within a few hundred barrels of equalling the largest production record in the Hobbs field during the past week in completing its State 4-B, an inside well, with an initial potential of 25,175 barrels of pipe line oil and about 15,000,000 cubic feet of wet gas from regular lime formation at 4214 feet. This heavy producer is located on 160-acre lease near the center of the north line of Section 29-18s-38e. Completion of this well concluded the company's development program for the time being, and its three leases have 10 wells rated at a combined daily potential of about 127,000 barrels. Continental Oil Company's State 3-A holds the record on potential for the field through having gauged at rate of 25,531 barrels daily.

Tidal Oil Company added two average sized producers on its B. Hardin 160-acre lease, comprising the NE¼ Section 19-18s-38e, and also provided a minor extension for the field to the north through the completion of Hardin 3. The latter is rated at 9000 barrels potential from lime at 4150-4212 feet, with a total depth of 4220 feet, and is located near the center of the west line of the lease. Hardin 2 made an initial output of 10,594 barrels oil and 8,300,000 cubic feet of gas at 4240 feet.

Texas Pacific Coal & Oil Company has succeeded in overcoming a difficult mechanical problem on its State 2-G, NEc Section 24-18s-37e, and completed the well November 7 with an estimated initial of 6000 barrels at 4218 feet. This well was slated to go on production in September, but six joints of three-inch tubing were dropped in the hole and buckled, with a total depth of 4208 feet. Fishing efforts failed to retrieve the junk, and the crew set to work in drilling a new hole just above the bottom of the seven-inch pipe.

Abandonment of Hobbs-High, Inc.'s Tatum 1, located on the east side of Hobbs townsite, and more than a mile from the nearest production, has followed with the drilling of this outpost test to 4356 feet. The test checked low on structure on all key formations, and during the past few months was aided with supplies by nearby lease owners in order that the latter could benefit by the geological data that resulted in drilling past the Hobbs horizon.

Current production in the Eunice pool, Lea County, is now averaging about 1800 barrels daily from two flowing wells and one pumper. Tidal Oil Company's Coleman 1 is flowing 760 barrels daily, with a total depth of 4147 feet, and the Continental Oil Company and The California Company's A. E. Meyer 1 is restricted to about 525 barrels daily. The latter is rated good for 1200 barrels daily on open flow from lime at 3995-4001 feet. Geo. F. Getty Oil Company's State 1 was placed on the pump during the past week, and is averaging about 500 barrels oil daily at 4000 feet, but may be given a shot.

Hobbs Field, New Mexico, Operations

Operator—	Tests	Drilling Derricks and Rigs	Locations	Total
Continental Oil Co.	1	.	.	1
Empire Gas & Fuel Co.	2	.	.	2
Geo. F. Getty Oil Co.	1	.	.	1
Humble O. & R. Co.	4	1	.	5
Landreth Production Corporation et al	.	1	.	1
Mid-Continent Petroleum Corporation	1	.	.	1
Midwest Refining Co.	5	.	.	5
Ohio Oil Company	1	.	.	1
Prairie Oil & Gas Co.	.	.	1	1
Shell Petroleum Corp.	2	.	.	2
Skelly Oil Co.	1	.	.	1
Sun Oil Company	1	.	.	1
The Texas Co.	1	.	.	1
Tidal Oil Company	3	.	.	3
Vacuum Oil Company	1	.	.	1
Total	24	2	1	27
Total previous week	22	4	.	26

Phillips Enters Wyoming Fields

Casper, Wyoming.—Of interest and importance in the Rocky Mountain oil situation is the entrance of Phillips Petroleum Company on the scene in Wyoming. The company is core drilling the territory east of Douglas and west of the Lance Creek field, and has a corps of geologists checking the territory preparatory to drilling to any depth required to develop either oil or gas production. If the oil is found, a refinery will be built at Douglas, and if gas is encountered the company contemplates a pipe line into Omaha. Phillips Petroleum Company already has leased a block of 30,000 acres in the territory, and has taken option on some additional 75,000 acres. The work of Phillips Petroleum Company has aroused the interest of Reiter-Foster Corporation of Tulsa which has blocked up acreage for itself, and the Shoup interests of Colorado are in the territory with geologists, checking over the possibilities there. Both Midwest Refining Company and Texas Production Company are manifesting interest in the region.

Midway-Geary Activities Increase

Casper, Wyoming.—Activities on the Midway-Geary anticline, lying northeast of Casper, are showing somewhat of a pick-up recently. Test has been spudded in at Geary dome, the southernmost of three structures, core drilling tests are under way at Middle Dome, and the well at Midway Dome is being slowly brought back to normal production after it had been drilled into water and then plugged back. The test on Geary Dome will have the producing sand at Midway for its objective, but it is expected that this will be found at least 200 feet deeper than at Midway. The producing sands at Middle Dome will be at least 500 feet deeper, it is believed. With all three structures proved the central Wyoming situation would look more successful than that of any other region in the Rocky Mountain states.

Gulf Coast and South Texas Fields

JACK LOGAN, *Staff Representative, Houston, Texas*

Legal Action Challenges Darst Creek Proration

SEGUIN, Texas.—Proration at Darst Creek was in a troubled uncertain state early this week, functioning only partially, under the ominous cloud of legal controversy seeking to test the actual power of the state in regulating the field's production.

A temporary restraining order was granted Saturday, November 8, in the Fifty-third District Court by Judge George Calhoun at Austin, forbidding the Texas Railroad Commission to enforce its proration order against Louisiana Oil Refining Corporation in the Darst Creek field after the latter had filed suit against the commission for injunction.

Following the granting of that temporary order, Louisiana Oil Refining Corporation began producing its properties without regard to its official prorated allowance, it is reported, and in consequence at least one other operator in the field with offset acreage, namely Magnolia Petroleum Company, began producing in larger volume as a measure against unequal drainage.

Following these developments it appeared that the inevitable result would be a similar opening up of wells throughout the field, with each operator acting to forestall unequal drainage. Inasmuch as Louisiana Oil Refining Corporation has been holding out for an allowance of 4500 barrels daily, as compared with an official proration allowance only half that amount, it appeared that the field's output might increase as much as 100 per cent, or to about 60,000 barrels daily.

In contrast with the above pessimistic possibility, there was some hope early in the week that relief might result from a hearing scheduled to be held in Austin on Wednesday, November 12, in Judge Calhoun's court relative to the above mentioned temporary order. The various operators at Darst Creek were called upon to attend the hearing, and its purpose was to aid in a decision as to whether the temporary restraining order should be continued in effect or set aside, restoring the proration program to its previous status.

In its petition for injunction Louisiana Oil Refining Corporation alleges that it is owner of oil and gas leases in Guadalupe County which it purchased April 15, 1930, from United North & South Development Company for $2,500,000, agreeing in the contract to produce at least 4500 barrels daily. The petition states further that the company's holdings in the Darst Creek field have a production capacity of 15,500 barrels per day, but that under the terms of the latest proration order the daily output was cut to 2271 barrels daily, or only 17.505 per cent of the company's potential.

Precedents Cited

In West Texas and other prorated areas in the state, similar contracts have been forced aside by the railroad commission's proration orders. But two groups of operators in the Texas Panhandle and one group in North Texas have temporary injunctions now in force against proration orders, with court tests pending.

The last complete gauging of Darst Creek wells was made during the period October 7 to October 11, but inasmuch as the railroad commission's order restricting the field's output to 30,000 barrels daily went into effect on October 29, there will not be a complete regauging of the field until a brief period preceding November 29. Since there have been some new wells completed recently, however, provision has been made for their participation in a plan for revision of the schedule of allowances effective Wednesday, November 12. The new wells completed up to November 12, gauged officially, will participate with the older wells in the official 30,000-barrel daily allowance beginning on that date. Umpire H. H. Fitzpatrick expected to have the new schedule ready promptly on November 12.

Considerable drilling is in progress now at Darst Creek, and during the past week over half a dozen wells were completed.

The Texas Company has spudded R. C. Appling 1 to try for production in the crevice area northeast of the Darst

Hearing Called to Adopt Rules For Pettus Operations

Austin, Texas.—The Railroad Commission of Texas has called a hearing in Austin on November 26, for the purpose of adopting rules to govern the drilling, casing, and completion of wells in the Pettus field, Bee County, and in other adjacent pools of Northern Bee County.

The following rules are proposed and will be considered at the November 26 hearing:

"Rule 1.—Surface casing must be set at a point not less than 450 feet below sea level, same to be cemented with 400 sacks of cement or in any event with sufficient cement to fill to the surface the annular space between the casing and the wall of the hole.

"Rule 2.—When any well is to be completed in a deeper pay stratum than the Nichols sand, a string of casing must be set immediately above such deeper stratum. This string of casing must be cemented with sufficient cement to bring it at least three hundred feet above the Nichols sand. This rule is to apply when only surface casing and one other string are set.

"Rule 3.—When a third string of casing is set sufficient cement must be placed behind it to reach up into the shoe of the second string.

"Rule 4.—In cementing any string of casing the pump and plug method must be used."

Only one well was completed in the Pettus field the past week, but it was of particular interest by virtue of being one of the largest producers yet drilled in the area. It was Union Producing Company's Ray 23, east offset to Houston Oil Company's No. 1, Block 39, Pettus townsite, the latter a gas well. On a one-hour gauge it produced 52 barrels through a half-inch choke, showing pressure of 600 pounds on the tubing and 350 pounds on the casing.

This well is deeper than the gas wells in that district, and it enhances the possibilities of territory north of it, previously regarded as only slightly promising.

Creek field proper, and on November 10 the well was drilling at 64 feet. The location is S. 40° E. 180 feet and N. 50° E. 450 feet from the Northeast corner of Jerome B. Alexander Survey. Other drilling wells of The Texas Company were at the following depths at the beginning of this week: L. Anderson 6 in sandy lime at 920 feet, Knoblock 6-A at 115 feet, Knoblock 7-A was drilling shale and lime at 340 feet, and Pauline Roamel 4 was in rock at 745 feet.

Magnolia Petroleum Company was nearing the completion stage late last week on all of its seven active tests in the field. Its Thomas Dix 13 started off flowing 15 barrels oil per hour after penetrating Edwards lime to a total depth of 2617 feet, and when equipped with tubing it is expected to make a 400-barrel producer. Dix 14 topped chalk at 2165 feet, and at last reports was drilling below 2300 feet. Rand Miller 5 has been standardized at 2564 feet to drill in, while Miller 6 encountered the Georgetown at 2545 feet, and had drilled to 2560 feet. M. T. Klein 3 is rigging up standard tools at 2590 feet, and Klein 4 had reached a depth of 2580 feet after topping Georgetown at 2540 feet. Top of Edwards lime was picked up at 2552 feet on Annie Knodel 4, and the log was showing good oil saturation at 2560 feet.

Louisiana Oil Refining Corporation's Dix 8 registered potential of 1735 barrels daily, no water, and Dix 9 showed potential of 1350 barrels daily although yielding 38 per cent water, with casing set at 2509 feet and bottom of the hole at 2575 feet.

Gulf Production Company's Posey-Baker 9 began pumping 1072 barrels daily at 2584-2603 feet, and its Tadlock 5 has spudded. Humble Oil & Refining Company's Denman 19-A was drilling late last week at 2395 feet; Sallie Wilson 7 was a 175-barrel well at 2623 feet; Denman 20-A was drilling at 2210 feet; Sue Denman 1-B was a derrick; and D. D. Baker 9 was being completed, with casing set at 2528 feet.

Vacuum Makes Location for Iowa Salt Dome Test

Houston.—Vacuum Oil Company has made location for a wildcat test, Bert T. Waite 1, Calcasieu Parish, Louisiana, which will be one of the most interesting wells drilled in the Gulf Coast for a considerable period. It will be the first well of the Iowa salt dome prospect, 2½ miles northwest of the town of Iowa. This is distinguished as probably the most thoroughly tested salt dome prospect of the Gulf Coast from the standpoint of geophysical work, having been worked repeatedly by torsion balance and seismograph.

The dome is interpreted as lying about half in Calcasieu Parish and half in Jefferson Davis Parish, with the Vacuum Oil Company location somewhat northwest of the top of the dome. That location is 225 feet north and 225 feet west of the southeast quarter of the southeast quarter of Section 12-9s-7w, on the Calcasieu side of the parish line. The line which divides the two parishes is also the dividing line between ranges, the Jefferson Davis Parish portion of the dome being roughly in Sections 7 and 18-9s-6w.

A particularly interesting feature of the prospect is that it is interpreted as being relatively deep—around 4000 feet or possibly a little more to the top of the dome. At that depth it would be around 500 feet deeper than Sugar Land, Fort Bend County, Texas, which is probably the most important coastal field yet discovered by geophysical methods.

Vacuum Oil Company's lease block in this area includes approximately 600 acres, comprising land of Coleman LeBleu, Mitchell LeBleu, and R. E. Gilson, as well as that of B. T. Waite. Shell Petroleum Corporation is the largest single lease owner on the prospect, and original discovery of the dome is credited to the seismograph of that company. Shell Petroleum Corporation made location for Heyd 1 in Section 13-9s-7w last spring, but the well was never drilled.

Proration to Continue in Salt Flat Field For 90-Day Period

Luling, Texas.—Proration will be continued in the Salt Flat field, Caldwell County, for the 90-day period beginning November 4 and continuing to February 2, 1931, according to the plan approved November 7 at the meeting of the Salt Flat operators' advisory committee, held at the Shell Petroleum Corporation office in the field.

After general discussion of proration for the period August 4 to November 4, under which output was restricted to 16,941 barrels daily or 80 per cent of the potential, it was voted that the new proration period be sanctioned, and that all leases in the field not producing their allotment during the past period, the potential of those leases be reduced 10 per cent and the surplus be equitably prorated to the leases that did produce their full allotment for the past period.

J. H. Russell, Gulf Production Company, moved to make the following amendment to the motion covering the above provisions: "That market production figures held by the umpire for the past 92-day proration period be used as basis, average daily production by leases for the 92-day period to establish the potential figures for the succeeding schedule." The amended motion was put to vote and carried.

Chairman J. P. Nash of Nash, Windfohr & Perry, presided over the meeting, and others in attendance included: J. V. Stockton, Gulf Production Company; J. O. Hardy, Shell Petroleum Corporation; C. E. Stanley, Humble Oil & Refining Company; E. L. Hugus, The Texas Company, J. Knowles, Cranfill-Reynolds Company; R. E. Bland, Nash, Windfohr & Perry; A. M. Hepler, Humble Oil & Refining Company; H. H. Hallum, Turman & Brown; E. C. Moore, Gulf Production Company; J. H. Russell, Gulf Production Company; Jack Kelley, Humble Oil & Refining Company; Don C. Deaver, Shell Pipe Line Corporation; F. L. Clements, Humble Pipe Line Company; James P. Nash, Nash, Windfohr & Perry; H. H. Fitzpatrick, field umpire, Railroad Commission of Texas; and T. W. Wilson, field gauger, Railroad Commission of Texas.

Gets Large Well at Humble

Houston.—One of the largest wells finished recently in the Humble field, Harris County, came in November 10, when The Texas Company's Stevenson Fee 43 began flowing at the rate of 80 barrels per hour through a one-half inch choke, registering pressure of 200 pounds and temperature of 78 degrees, the production being 45 corrected gravity oil. On a one-hour open flow test the well yielded 135 barrels. Total depth of the well is 4823 feet, and in completing it 460 feet of 4¾-inch screen were used.

Emsco Not Sold

Chicago.—Reports published in a Chicago newspaper to the effect that The Youngstown Sheet & Tube Company had purchased The Emsco Derrick & Equipment Company of Los Angeles are "unfounded, Art Trout, vice president of Emsco Derrick & Equipment Company, told THE OIL WEEKLY Tuesday night.

Rycade Oil Corporation Quitting as Operating Unit

Houston.—The process of liquidating the affairs of Rycade Oil Corporation is now under way to the extent that as an operating company the Rycade probably will cease to exist after the first of the year.

Where Rycade Oil Corporation has held joint ownership with other operators in properties having production, arrangements are being made with the partners for the operation or sale of the properties. Where no joint ownership exists, arrangements are being made, as far as possible, for the transfer of properties. It is contemplated that very shortly the organization as such will be disbanded.

The history of Rycade Oil Corporation, which has operated in Texas, Louisiana and New Mexico, has been largely that of an exploratory company.

In the Texas Gulf Coast one of the company's most important properties is at Nash dome, Fort Bend-Brazoria Counties, where it has been practically the sole operator, holding extensive leases. It discovered oil there early in 1926, and during the following four years, that is, to the close of 1929, produced approximately 1,285,000 barrels from that field. The company also developed production at Markham in Matagorda County. On the east flank of Stratton Ridge dome, Brazoria County, it owns some leases which may prove very valuable. (A well is being drilled at present on that acreage.)

In Coastal Louisiana one of the principal properties is at Bayou Bouillon, St. Martin Parish. Rycade Oil Corporation formerly owned in fee much of the land covering that dome, but about a year ago Humble Oil & Refining Company acquired an interest in those properties. The Rycade had discovered oil there in the spring of 1928, establishing the first commercial production on the dome. Aside from the above mentioned properties the company has other valuable properties throughout the Texas-Louisiana Gulf Coast, including leases on various geophysical prospects. Outside of the Gulf Coast one of the chief properties of Rycade Oil Corporation is the field which it established in eastern Maverick County, West Texas, 20 miles east of Eagle Pass on the Chittim and Sullivan ranches. Gas and limited oil production was established there from the Glenrose limestone slightly below 5000 feet, and although the oil production has not assumed commercial proportions, the gas is being marketed to industrial and domestic consumers at Eagle Pass and Del Rio and in the adjacent territory.

Yount-Lee Denies Proposed Sale to Shell Corporation

Houston.—Persistent rumors here, and even as far away as at the American Petroleum Institute meeting in Chicago, to the effect that Shell Petroleum Corporation is negotiating for the purchase of Yount-Lee Oil Company's properties, have been branded by an official of the latter company as being without foundation.

Questioned by long-distance telephone early this week regarding the rumor, T. F. Rothwell of Beaumont, vice-president of Yount-Lee Oil Company, asserted emphatically that "There is nothing to it."

Spread around promiscuously, without verification from either of the companies involved, the rumors had assumed interesting if not entirely credible form, with purported facts and figures on the details. One rumor was to the effect that Shell Petroleum Corporation had posted $10,000,000 as "earnest money" in New York pending consummation of the reported sale.

Yount-Lee Oil Company, of which Frank M. Yount is president and general manager, has its main headquarters in Beaumont, Texas, and it rates as one of the larger producers in Texas, by virtue of extensive producing properties on the Gulf Coast, particularly at Spindle Top dome, just outside of Beaumont. It discovered the deep pay there, and is predominantly the largest producer in the field today, as it has been since that discovery in 1925. Adjacent to Spindle Top field the company has one of the largest crude oil tank farms in the Gulf Coast, and in connection with it a large, modern tanker-loading crude oil terminal on the Beaumont-Port Arthur ship channel. The company has production at Barbers Hill, Sour Lake, Esperson, High Island, South Liberty, and Hull in the Texas Gulf Coast, and at Evangeline, Hackberry, East Hackberry, and Welsh in Coastal Louisiana, to make no mention of extensive non-productive but promising acreage throughout the Texas-Louisiana Gulf Coast. The company also owns extensive fee lands, including nearly all covering the Sweet Lake and Black Bayou fields, Cameron Parish, Louisiana.

Canadian Duty Benefits Montana Producers

Great Falls, Montana.—Recent order of Canadian officials for a duty of 2½ cents per gallon on gasoline shipped into the Dominion of Canada, leaving crude oil to enter there free, will react to the benefit of Montana producers which have been faced by a deadlock recently because of the proration to 50 per cent in both the Kevin-Sunburst and Pondera fields. Canadian refiners may now use more Montana crude and less refined products. If this revised program works out as some observers predict, there soon may be competition for Montana crude in place of the tendency to refuse this product at prices high enough to allow a fair profit to producers.

Wheeler Ridge Excitement Subsides

Bakersfield, Calif.—J. J. Ritchie's No. 1, near El Tejon and about six miles southeast of Wheeler Ridge, has cored sand which showed oil and gas, but reports that a good oil sand has been cut are erroneous. Oil was circulated to loosen the drill pipe, giving rise to rumors that a new field was about to be opened.

Drumwright A. P. I. Meeting Held

Drumwright, Oklahoma.—Following up the subject of "Oil Field Gas Engines," the Drumwright Chapter, A. P. I. division of production will have D. O. Barrett, designing engineer for Gypsy Oil Company, as its principal speaker at the next regular meeting on Tuesday, November 18. Mr. Barrett spoke to the Chapter on September 16, on the same subject but confined discussion to two-stroke cycle engines. In the meeting of November 18, he will deal with four-stroke cycle gas engines, and plans on having a complete engine installed in the meeting hall. The talk will be further illustrated by lantern slides showing the various four-stroke cycle gas engines now in use. Proper methods of alignment of engines and outer bearings will be demonstrated. The meeting of September 16 drew more than 200 members and guests and the secretary is making preparations for a larger attendance at the coming meeting.

News From California Fields

BRAD MILLS, ***Staff Representative, Los Angeles, California***

Production at Playa del Rey Increases to 35,000 Barrels

LOS ANGELES. — Completion of 15 wells during the past week sent production at Playa del Rey up to 35,000 barrels and established a peak which should not be greatly exceeded at any time in the future, barring unexpected developments. A Los Angeles basin field has never reached peak production on schedule, but the maximum level here probably will not pass 40,000 barrels, and under no circumstances should exceed 50,000 barrels. In the absence of a single outstanding completion and in view of the rapid decline of many of the best producers, wells must be placed on production at a rapid rate to maintain a weekly average of 30,000 barrels.

Conservative engineers who were prejudiced against the field have witnessed a larger production than they thought possible, but they may yet have the last laugh. A spurt was inevitable, due to the intense activity in the townlot district, the chief question now being whether new production will more than offset the decline. More than 100 wells were started during a short period late last summer and the flock of completions now being recorded are the result of the rush.

Completions have been exceeding new locations for three weeks and it should require only a matter of time to reduce field activity. Wells actually making hole total 90, as compared with 100 at the end of the previous week. Locations, rigs, idle tests and wells preparing to spud account for about 50 projects.

The drilling peak seems to have past, regardless of the production curve. With two producing zones and possibility of extensions, there is still a possibility of unexpected developments. Hedging estimates probably would lead to confusion and it now seems the best policy merely to state the facts as they appear. New locations will be made as long as vacant lots remain in the wake of development and promoters can raise money enough to start operations. Extensions, no matter how small, often lead to increased activity which is usually unjustified.

Many of the one-well companies just tasting the first draught of oil have refused to disclose the production of their new prizes. In most instances, however, the flow has been found to be smaller than hinted. Several companies have experienced difficulty because they did not know how to complete wells. One well was drilled to the oil sand in 38 days, but it required 40 days to complete the test as a small producer. The larger companies have experienced townlot activity and have the bulk of production.

Many Lots Too Small

Parts of the townlot district could not be drilled more intensely. Many of the lots are too small to support a derrick and the necessary paraphernalia. Traffic along the narrow Speedway Boulevard is very slow and cars wishing to make good time avoid the field. Excitement still prevails, but in a more modified form than during the first part of development. Several wells have developed mechanical difficulties, while others have been outright failures. The average initial yield has been far below that of leading Los Angeles basin fields and investors are beginning to doubt the wisdom of townlot operations.

Of the two zones, the shallow sand is proving much the better. Water has caused trouble in the lower zone, which is also far from uniform in extent and thickness. Many of the upper sand wells have included more than 1000 feet of formation below the final shutoff, while the deep completions have been unable to do half as well. The average lower zone producer is flowing from less than 250 feet of sand.

One of the outstanding completions of the week was Elmer Oil Company's No. 4, a deep zone producer in the southern end of the field. Finished at 6065 feet, a string of seven inch casing was cemented at 5860 feet. Initial production was 2000 barrels but the flow quickly settled to 1300 barrels. The oil was clean and both the casing and tubing pressures were above the average. Of the 15 wells completed during the week, six were finished in the lower zone and nine in the shallow zone.

Activity is crowding both up and down the Pacific Electric right-of-way from the center of the original hotbed of drilling. Development is much more limited along the northwest flank than toward the southeast, at least as far as restrictions are concerned. Structural conditions apparently favor the limited area between the present center of townlot activity and the "dead line" formed by the city of Venice, over the strip leading toward Playa del Rey.

The large tracts controlled by the Ohio Oil Company and Union Oil Company will not be developed extensively this year. These companies are drilling only the necessary offsets, besides feeling around to determine the probable extent of the producing zones. It is fortunate for the industry that these large blocks are held in reserve. Conservative development of these holdings probably will keep Playa del Rey on the producing map much longer than would be the case if the entire district were thrown open to intensive drilling.

North Belridge Field Test Reaches Temblor Formation

Taft, California.—Richfield Oil Company has definitely reached the Temblor formation in Belridge 1, a test in the North Belridge field, following penetration of a very doubtful body about 700 feet thick. The discovery virtually removes the fear that the well was located outside the producing limits of the zone, although it is too early to determine the value of the formation. Cores taken above 5700 feet showed light oil in the hard sandy shale and good acetone cuts were secured. Original reports led to the belief that the Temblor was found above 5000 feet, but subsequent drilling failed to support the theory.

The well is located about 1½ miles from Belridge Oil Company's discovery well, which was completed at 5457 feet and came in with an initial production of 2750 barrels. The Temblor zone holds a peculiar significance, because of the Kettleman Hills field and the discovery in the North Belridge field has increased the possibilities of California's most unusual producing zone. Union Oil Company, Stand-

Roumania calls for Halliburton Equipment.

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ard Oil Company, Associated Oil Company, The Texas Company, Rio Grande Oil Company and Shell Oil Company hold large blocks in the vicinity of the North Belridge field and plan to develop their holdings in a conservative manner. Belridge Oil Company's Fee 1, the discovery well, has increased its flow to 3000 barrels of 45.4 gravity. The accessibility of the district and small cost of drilling as compared with costs at Kettleman Hills make it especially inviting to companies wishing to build up their production.

California Gas Conservation Law Held Constitutional

Los Angeles.—A decision, upholding the constitutionality of the California gas conservation law and giving the state the right to supervise the development of critical fields if necessary to protect the people's interests, has been handed down by Superior Judge S. L. Strother, who presided at the Kettleman Hills hearing at Hanford.

The decision is not final but it is one of the most drastic given in the series of hearings to determine the validity of the statute. December 2 was set as the date for opening of the hearing on the preliminary injunction which the state will seek. Judge Strother in his oral decision stated that in his opinion the people of the state owned the oil and gas, and that it was inconceivable that if it belonged to the owner of the land, his neighbor might, by putting down a hole in the ground and taking it away from him by any process of law, acquire title to it. He stated in his decision that it was his opinion that it was perfectly competent for the state to provide for a division among all operators and among all owners, regardless of whether they were operators or not, or whether their lands had been developed or not, or if it could be established that those operating and drawing from the field were drawing from a common pool.

He further stated that the state has the absolute right to control development and to control the division of profit that may accrue from such development. Judge Strother also included in the decision the opinion that those with no development should pay their portion of expenses of development where they were inside the producing limits of the field.

Abandon Test North of La Habra

Los Angeles.—Abandonment of Union Oil Company's Sansinena 11, a test north of La Habra, definitely removes one of the most promising Los Angeles basin wildcats and leaves a wide gap between Brea Canyon and the old Whittier field unfilled. Oil sand was cored around 4400 feet and a small production probably could have been obtained, but the well did not fall in the commercial class at any time. A string of 6⅝ inch casing was cemented at 4445 feet but the formation tested below the final shutoff failed to display the necessary life to yield profitable production.

Associated's Net Earnings Off

San Francisco, California.—Associated Oil Company and 100 per cent owned subsidiaries earned $4,596,561.55, or $2.01 per share, during the nine months ended September 30, as compared with a net earning of $5,312,222.87, or $2.32 per share during the corresponding period of 1929. Net earnings during the first six months exceeded those of the same period of 1929, but price cutting reduced the third quarter earnings sharply and brought the total for nine months to a figure below the total of last year.

Pacific Section, A. A. P. G. Has Record Attendance at Meeting

LOS ANGELES.—A record attendance of more than 200 featured the seventh annual meeting of the Pacific section, American Association of Petroleum Geologists, held here November 6 and 7. The Pacific Section, Society of Economic Paleontologists and Mineralogists, met jointly with the geologists, besides holding an evening session on November 6. The program included an unusually representative range of subjects, with geological theory and practice taking precedence over the economic angle at all sessions. The first day was given over to papers which were accepted without argument, but the second day brought about several warm discussions.

Dr. M. G. Edwards of Shell Oil Company was elected president for the ensuing year. Louis N. Waterfall of Union Oil Company was elected secretary-treasurer. The executive session was held prior to the Friday afternoon program. The principal meetings and the Thursday luncheon were held at the Biltmore Hotel. R. D. Reed, president of the Pacific Section, presided.

The first paper Thursday morning was "The Geological Column of Western Washington," by George A. Macready. The paper disclosed that probably 30,000 feet or more of Tertiary formations occur west of the Cascades, and that shale predominates with lesser amounts of sandstone and igneous rocks. Miocene, Olicene and Eocene were found. There is an immense thickness of unfossiliferous shale, some of which may prove older than Tertiary. Volcanoes form a large part of the rugged Olympics and the Cascades, it was shown.

"Collophane from the Miocene Brown Shales of California," a paper by E. Wayne Galliher, described the pyrited collophane oolites from the Miocene brown shales of the San Joaquin valley. Certain phases of the origin of the pellets were also discussed in the short discussion.

Olaf P. Jenkins, chief geologist, State of California, discussed the "Progress of Geologic Branch, California State Division of Mines." Since July 1, 1929, the Division of Mines has been rapidly developing a useful Geological Survey, though funds available have been limited. It was pointed out that a complete bibliography of California geology is in press, the state geologic map well under way and 12 detailed geologic surveys are in progress.

Thayer Paper a Feature

One of the featured papers Thursday morning was "The Basterial Genesis of Hydrocarbons from Fatty Acids," by Lewis A. Thayer, wherein it was shown that it has been generally admitted and accepted that petroleum has originated from animal and plant remains, particularly from fats, oils, waxes and resins ,these substances being relatively resistant to decay; and that they are readily hydrolized in nature into their components; i. e., fatty acids and an alcohol, especially glycerol. The course of decomposition of glycerol is well known, but of the fatty acids only acetic acid has been extensively studied. The paper dealt chiefly with the hypothesis that the higher homologues might be decomposed by the same group of bacteria to carbon dioxide and the corresponding higher hydrocarbons. It was disclosed that experiments revealed that this is not the case, but that the fatty acids studied, from acetic to margaric, give rise to carbon dioxide and methane only.

E. R. Atwill read a paper on "Truncation of Maricopa Sandstone Members at the Etchegoin-Maricopa Contact, Maricopa Flat," which was a discussion of the subsurface

geology of a portion of Maricopa Flat, describing the manner of truncation of sandstone members at the Etchegoin-Maricopa contact, suggesting a reason for commercial accumulation here and a guide for future drilling.

"Type Localities of the Tertiary Formations of California," by Hubert G. Schenck of Stanford University, touched on the need for accurate correlations of formations and directed especial attention to the siliceous shales of the Miocene.

W. F. Barbat and John Galloway presented a paper on "The San Joaquin Clay of the California Pliocene," in which it was shown that the San Joaquin Valley clay described by F. M. Anderson in 1905 as a stratigraphic unit in the Pliocene of the West Side had been overlooked by late writers. The paper revived and redescribed it as a formation of fresh and brackish water origin between the Tulare formation and the Mulinia-bearing beds of the etchegoin.

The Pacific section, Society of Economic Paleontologists and Mineralogists met Thursday night at the Engineers Club. A dinner preceded the program and progress report of committee on nomenclature. The two papers presented were "foraminiferal Zoning in the Monterey Shale, Vicinity of Type Locality," by E. W. Galliher, Hopkins Marine Station, Pacific Grove, and "Use of Diatoms in Stratigraphy," by K. E. Lohman, California Institute of Technology.

Eight papers were presented Friday, in addition to the annual election of officers.

L. M. Clark of Shell Oil Company read a paper on "Additional Notes on the Stratigraphy of the Santa Ynez Mountains," which revealed that there was evidence along the south flank of the Santa Ynez Mountains that the Vaqueros lies unconformably upon the Sespe and older rocks and that only the lower 800 feet of Sespe passes into the marine beds to the west.

Bailey Paper Extensive

"The Miocene Stratigraphy and Source Sediments for Vaqueros Oil, Santa Barbara District," by Thomas L. Bailey, was one of the longest papers presented and was followed by considerable discussion. It was shown that the Miocene section is divided into the Santa Margarita, the Monterey and the Vaqueros mudstone, and the Vaqueros sandstone. The paper brought out that the possible generative sediments for oil now stored in the Vaqueros are Monterey shale, Vaqueros mudstone and Eocene shales. The Monterey is by far the richest source rock and probably contributed most of the oil. The various methods by which the oil may have migrated from the overlying shales into the Vaqueros sand was discussed.

Ralph D. Reed of the Texas Company read a brief summary of Potonie's ideas about oil genesis, which he termed "Petrography of Oil Shale." Copies of the summary were passed out to attending members and the review by Reed was particularly well received, in view of the fact that there is no English translation available. Bitumen, Eubitumen, Protobitumens, petrolprotobitumens, kerogen, sapropel (German Faulschlamm) and Englers terms and their relations were defined, following the statement that oil shale petrography, hitherto much neglected, furnishes data of importance in evaluating theories of oil genesis.

E. K. Soper discussed "Origin of Roumanian Oil," which was a review of Krejci-Graf's book on this subject, was well received. Soper stated that it was possible to detect a similarity between Roumanian and California formations, in that both include the lower Pliocene. Some of the salient points brought out in the paper were that faulting in Roumania plays a minor role in accumulation, oil accumulation is dependent upon structural conditions, lower organisms seem to have played a major role in the formation of oil, Tectonic action is necessary to accumulation and migration, chemical analysis of formation water cannot be used in correlations of formations, and that limestone is a better reservoir than sandstone.

Other papers presented Friday included "The Problem of the Origin of the Oil Occurring in the Southeastern Portion of the San Joaquin Valley," by A. R. May, "Stratigraphic and Economic Significance of the Kreyenhagen Shale of California," by Olaf P. Jenkins, California state geologist, "Effects of Underground Storage Conditions on the Characteristics of Petroleum," by Paul W. Prutzman, and "Considerations of the Possible Origin of Crude Oil in the Venice Field," by H. W. Hoots and A. L. Blount.

A dinner dance was given Friday night at the Los Angeles Tennis Club. This was originally scheduled for Saturday but was moved forward one day.

World's Record Well Is Completed At Long Beach

Los Angeles.—Completion of Star Petroleum Company's Colby 2 at 8550 feet established a new world depth record, besides slightly extending the producing limits of the deep zone at Long Beach along the north flank. The record well started flowing at the rate of 1000 barrels but settled rapidly to about half the initial yield. A bridge was placed at 8480 feet and a string of 4¾ inch casing cemented at this point, but there is a doubt as to the effectiveness of the bridge. When cleaned out only five feet below the shoe of the casing, the well started to flow through the casing without a liner. Since the deep test is producing from only 70 feet of zone at most, the formation shows unusual promise and may lead to deepening of many wells on the north slope.

Dabney-Johnston Oil Corporation's No. 76, completed a week ago with an initial production of 2800 barrels, increased its flow to 3250 barrels and became the largest producer in the field on short notice. The new producer is located on the south slope and was completed at 6250 feet.

Philip L. Bixby is preparing to test his No. 1, located north of the producing limits of the field, and if a commercial producer is obtained additional drilling will result. This outpost test was drilled to 6400 feet, with a string of 6⅝ inch casing cemented at 6205 feet.

Two North Dome Wells Near Completion

Coalinga, California.—Either Standard Oil Company's No. 29J-65 or Petroleum Securities Company's Felix 2 should be the next completion on the North Dome at Kettleman Hills. The former is drilling in shale and gas sand at 7225 feet, while the latter is drilling out the cement below the 8⅝ inch shutoff at 6773 feet. No. 29J-65 is an offset to Superior Oil Company's Huffman 1, which is flowing 13,000 barrels of 40 gravity oil from 8323 feet. This well will necessarily reach a much greater depth than producers on top of the structure. Continental Oil Company is drilling ahead rapidly in Elliott 2-16, having passed 5100 feet. This test is an indirect offset to the discovery well and should find the Temblor at a nominal depth. Shell Oil Company is drilling at 6360 feet in Dixon 1, also located on the north flank. Richfield Oil Company, one of the most recent entries into the field, is ready to spud in Signal 1, a north flank test on Section 36-21-17.

Louisiana--Arkansas Field Notes

Average Production of Sabine Parish Now 8685 Barrels

SHREVEPORT.—Recent flowing wells completed in the Zwolle oil field of Sabine Parish, Louisiana, during the week ending November 9, sent the daily average production of that field to 8685 barrels, making Zwolle the largest producer of light oil in the North Louisiana-Arkansas territory. It just tops light Caddo, which had 8385 barrels daily average during the week.

A 660-foot western extension of the recently opened 1½ mile south extension of the Zwolle east field was made during last week when Pelican Natural Gas Company completed Sabine Lumber Company 5, NW NE Section 11-7-12, at 2436 feet in the Zwolle chalk flowing 300 barrels of oil daily.

Three-quarters of a mile northeast of production in the Zwolle east field, A. H. Teat bailed dry in Craig 1, NE NE Section 25-8-12, at 2450 feet, but the well is being deepened. Eight new locations were announced for Zwolle during the last week, all the activity centering in the eastern part of the field and outside the proven limits.

The Holly district of De Soto Parish, Louisiana, where pay is obtained in a lenticular Woodbine formation added its first producer in several weeks when Standard Oil Company of Louisiana's Farmer A-4, NE NW Section 5-13-13, was completed with six feet of sand at total depth of 2890 feet flowing 611 barrels of oil. The yield increased for the next two days and then began to drop off, in the latter respect following other wells in the field. It is a northwest offset to the discovery oil well of the field and the farthest well to the north.

Hope of getting production below the Blossom in a wildcat test nine miles south of Zwolle production was blasted when Toteco Oil Company's Louisiana Long Leaf 1, NE NW Section 18-6-12, drilled plug at 3965 feet in 6⅝-inch casing and after experiencing a heavy suction which drew in the air with a roar for a few moments began to flow hot salt water testing 190 degrees at the rate of 20,000 barrels daily. Test has not been made of a well at almost a similar depth across the Texas line in Sabine County, where Loring Oil Company's Nona Mills Lumber Company 1, James Mason Survey, had nine-inch OD casing set at 4150 feet after showing 1,000,000 feet of gas at 4200 feet.

Deep Test at Homer

Louisiana Oil Refining Corporation has derrick up for its 4500-foot test in the old Homer field of Claiborne Parish. The test is Langston 10, Section 19-21-7w. Prairie Oil & Gas Company is rigging up for its 5000-foot test in Shackelford 1, SE NE Section 30-23-5w, in northeast Claiborne Parish, on a 75,000-acre block.

J. E. Crosbie, Incorporated, and associates, who stopped at 2740 feet in the second Smackover sand in G. L. Murphy 1, Section 13-16-16, southwest by three-quarters of a mile of production in that field, after starting the test with the announced intention of going to 4500 feet unless pay was found higher, have put the well on the beam and on Sunday, November 9, it was pumping at the rate of 100 barrels of fluid daily, 50 per cent 20.5 gravity oil. H. H. Cross and Company have tied into the well with a gathering line.

Gasser for Bellevue

H. I. Morgan and Shreveport-El Dorado Pipe Line Company, who have drilled several failures since getting an oil well in the upper Trinity zone in the 1800-foot horizon on the southwest flank of the old Bellevue shallow structure in Bossier Parish, appear to have found another gasser in Kendrick B-10, SE SW Section 22-19-11, showed gas at the estimated rate of 30,000,000 cubic feet daily through drill stem, Saturday, November 8, in a sand on top of volcanic ash at a depth of 1750 feet, about 100 feet above the oolitic lime in which the oil well was completed 400 feet to the west. The formation encountered in Kendrick B-10 is identified as the same as that in which the discovery gasser in the Trinity zone of the field was completed. This well on the same lease was in SW SW Section 22-19-11.

Claiming to have encountered a sand at around 2950 feet after having tested about 10 barrels of 12 gravity oil and 500 barrels of salt water 100 feet above E. & F. Oil Company is arranging to set 4½-inch casing in E. L. Beck 1, Section 36-15-26, Miller County, Arkansas.

After drill had hung and defied efforts to dislodge it at 2183 feet in a sandy shale which had tested 55 joints of mud with a show of oil, A. B. Turner, Trustee, has junked hole in Brown 1, Section 23-15-18, 1½ miles northwest of Mount Holly production in Ouachita County, Arkansas, and skidded 55 feet east and spudded in another hole.

Two miles southwest of the producers in Section 10-18-13, which comprises the Urbana district of Union County, Arkansas, Oilfields Corporation is drilling ahead in J. A. Simmons 1, NW NW Section 13-18-13, after showing three joints of mud and oil through drill stem from 2301 to 2326 feet and previously testing dry from 2293 to 2301 feet.

Red Bank Oil Company, which recently completed Hamm 1, SW NE Section 33-10-26, Franklin County, Northwest Arkansas, as a 6,500,000-foot gasser at 3750 feet, Arkansas' deepest commercial well, is now fishing for tools in the hole.

E. R. Henderson made location for a second wildcat test in Pike County, Arkansas, during the week, this being S. L. Lee 1, SW SE Section 31-8s-24w. River Valley Development Company has made location for Collier 1, SE SE Section 21-9-25, Johnson County. In the latter County Conn Gables and associates abandoned Joe Holing 1, Section 20-9n-25w, as a dry hole at 2238 feet in a hard sand.

A 500,000-foot gasser was completed in the Sabestian County gas area of Northwest Arkansas in Mansfield Gas Company's Fee 1, Section 1-4n-31w, at total depth of 2000 feet.

Several miles southwest of production in the Holly field of De Soto Parish, Louisiana, J. W. Clark bailed dry in 12 feet of sand in Tidwell 1, Section 22-13-14, at 2952 feet. There was a slight show of oil and gas. A half mile northeast of production in Red River Parish, T. G. Shaw's Wilkinson 1, NE NE Section 4-12-10w, is standing with 700 feet of oil in the hole and the bailer stuck after making a few heads of oil. Total depth is 2838 feet.

Await With Interest Test Northeast of Jackson Area

JACKSON, Mississippi.—Testing of Gulf Refining Company's Hamilton Estate 1, SW SW Section 4-5-2e, Rankin County, more than two miles northeast of the gas producing area in the Jackson gas field is being awaited here with interest. This test checked 208 feet lower than nearest gas producers. With an elevation of 284 feet this well topped the Midway shale at 2537 feet and topped the Midway chalk at 2620 feet. Nine-inch casing was set at 2610 feet. Interest was increased by reports that the six feet of chalk penetrated showed oil saturation, the oil appearing to be dead.

Two gas wells were officially completed during the week. Jackson Oil and Gas Company's Mayes 1, SW SE Section 2-5-1e, Hinds County, which was completed at total depth of 2568 feet (corrected depth) in the chalk last February making an estimated 2,000,000 feet of gas and a quantity of salt water, was plugged back to 2450 feet, the water plugged off, and the well was brought in at a depth of 2466 feet making 20,000,000 feet of gas. From the original depth it had supplied several drilling tests with fuel run through separator. Elevation is 272.8 feet. It was the well which started the development program in real earnest here.

On the Rankin County side of the field which has proven to be the more productive, the high apparently being in Section 12-5-1e, Cleve Love and associates have completed Brown 1, SE SE Section 12-5-1e, at total depth of 2407 feet, with five feet of Midway chalk, making 40,000,000 cubic feet of gas free of water. The Midway shale was topped at 2306 feet. It did not extend gas production. These wells bring the total of gas producers to 24 in the Jackson field.

After Hawkeye Gas Company's Webster 1, NW NW Section 15-5-1e, Hinds County had bailed 6⅝-inch casing set at top of the Midway chalk at 2474 feet, for about 1500 feet salt water rose to within 200 feet of the top. A parting in the casing about 750 feet off bottom was blamed. However, the condition was quickly corrected before the chalk horizon was flooded with salt water and 4½-inch casing will be set in the test on top of the chalk.

Three new locations were announced during the week. Feazel Oil and Gas Company has run derrick pattern for Cox 1, Section 12-5-1e, Rankin County, and Wallace Oil and Gas Company has up rig for Cobb 1, SE NE Section 12-5-1e and Southern Petroleum Company is building derrick for Ivy 1, SE SE 12-5-1e.

Considerable acreage buying has been made by Fred L. Kyle of Shreveport northeast of the gas producing area. Kyle paid as high as $100 per acre for tracts centering between the Louisiana Gas and Fuel Company's Toole 1, a large gasser in Section 28-6-1e, and Gulf Refining Company's latest location, McLaurin 1, Section 30-6-2e. It is estimated that Kyle has spent over $125,000 in his purchases. Who he represents has not been announced.

J. D. Collett who with Carter Oil Company has been drilling for several months on a wildcat test in Yalabausha County, north Mississippi, in the Water Valley district, has junked and abandoned Blackmer 1, SE NW Section 14-11-4w. An attempt to dislodge a frozen drill stem with a shot of eight quarters of nitroglycerine was futile. Total depth was 2434 feet.

John Glassell, Jr., of Shreveport, with W. F. Skaggs, J. H. O'Riley, Charles Green and R. C. Gaddis, all of Laurel, Mississippi, have incorporated the Mississippi Gulf Oil and Gas Company to be domiciled at Laurel. Capital is $25,000, all common stock. This is the company which blocked 30,000 acres recently in Covington County, south Central Mississippi. A location has been made on this block in Section 36-8n-16w.

Dixie Petroleum Company has also recently been chartered and will take over the holdings of Raymond A. Moore and associates in Warren County near Vicksburg where derrick is up for Clark 1, SW SW Section 31-17n-5e. The incorporators are all residents of Vicksburg and are: K. D. Wells, J. F. Jones, and Alexander Fitzhugh. Capitalization is $50,000 of common stock of $1 par value. Other recent incorporations are: Bay Springs Petroleum, Inc., capital $50,000, with derrick up for a wildcat in Jasper County; Belhaven Oil and Gas Company; Consumers Gas and Oil Company; Southern Gas Utilities, Inc.; Central Industrial Gas Company; and Mississippi Transmission Corporation.

Work of converting the artificial gas system of Jackson into one for utilization of natural gas from the Jackson field is nearing completion. Already gas from three of the field's gas wells has been turned into the mains comprising what is known as Zone 1. This gas is being pulled from Louisiana Gas and Fuel Company's Toole 1, Section 28-6-1e; Love Petroleum Company's Mendoza 1, Section 12-5-1e, both in Rankin County, and from Love Petroleum Company's Hutton 1, Section 11-5-1e, Hinds County.

Sugar CreekTrinity Gas Field to Have Gasoline Absorption Plant

Shreveport, Louisiana.—Contract for construction of a 30,000-gallon gasoline absorption plant in the Sugar Creek Trinity gas field of Claiborne Parish, Louisiana, near Arcadia, has been awarded to Stearns-Rogers Manufacturing Company of Denver, Colorado, by Triangle Drilling Company of Shreveport, Standard Oil Company of Louisiana, and Louisiana Gas and Fuel Company, joint owners of three gas producers and 8000 acres of land surrounding the site of the proposed plant.

Work of clearing the site, building houses and other preliminary preparations has been completed and actual construction is ready to begin with the entire project to be completed by January 1.

The plant will have a daily capacity of 30,000 gallons of gasoline and will use 30,000,000 cubic feet of gas. At present there are three gassers producing from the Trinity at 4300-4700 feet with a combined open flow capacity of approximately 75,000,000 feet daily. The owners expect the gas run through the plant to average 1000 gallons or better per 1,000,000 cubic feet. The discovery well of the field, Kilpatrick 1, Section 7-19-5W, showed 1900 gallons per 1,000,000 but the next two gassers showed only about 900 gallons of gasoline per 1,000,000. The mineral seal oil absorbing medium will be used.

Texas Louisiana Pipe Line Company, a subsidiary of United Gas Company, is running an extension from its trunk line eight miles from the field and will take the gas after it has been run through the absorption plant. A two-inch line will be laid to a railroad point at Athens, Louisiana, six miles from the plant where the gasoline will be transported to a gasoine loading rack.

Standard of California Net Down

San Francisco, California.—Standard Oil Company of California showed a net profit of $30,435,563.23 during the nine months ending September 30, as compared with $34,375,480.17 during the corresponding period of 1929. The company formerly issued only annual financial statements but will issue quarterly reports in the future.

COMPLETIONS FOR PAST WEEK IN U.S. FIELDS

CALIFORNIA

Company, Well and Location	Initial Production Bbls.	Depth
ELWOOD—		
Elwood Explor. Co., State 90-5	900	3520
HUNTINGTON BEACH—		
Richfield Oil Co., Deiter-Golay 3	40	3570
LONG BEACH—		
Dabney-Johnston Oil Corp., No. 76	3000	6250
Delaney Pet. Corp., Just 1	200	7445
Italo American Pet. Corp., No. 1	250	7590
James Oil Co., No. 6	150	7450
A. N. Macrate, Britch 1	700	7010
A. H. McFarland Synd., No. 1	750	5930
Shell Oil Co., Nesa 12	1200	6160
Star Pet. Co., Colby 2	500	8550
Washington Pet. Co., No. 1	50	6830
MONTEBELLO—		
St. Helens Pet. Co., Monterey 15	175	5365
PLAYA DEL REY—		
Grace Bryan, Tuttleback 1	400	6190
California Northern Corp., Lindblade 2	200	6390
Conservative Pet. Corp., Jones 1	500	4535
Done De Maria, No. 1	180	6250
Elmer Oil Co., No. 6	1000	6165
George F. Getty, No. 5	600	4301
Marcell Oil & Gas Co., Black 2	500	4395
Rohde Investment Co., No. 5	200	4705
Union Oil Co., Townsite 3	225	4895
Venice Oil Synd., No. 4	200	5870
No. 3	300	6093
POTRERO—		
Pentz & Farmer, No. 1	125	6225
Taylor Oil Co., No. 1	150	5630
ROUND MOUNTAIN—		
Shell Oil Co., Jewett 14	175	1695
Freeman 9	160	1705

OKLAHOMA

Company, Well and Location	Initial Production Bbls.	Depth
CARTER COUNTY—		
Magnolia Pet. Co., Brady 2, sw c se 13-1s-3w	130	2222
Wirt Franklin Pet. Corp., Mitchell 4, ne se se 24-1s-3w	500	2174
J. H. Hudson et al, Meeks 1, nw sw 19-1s-2w	15	2146
G. L. Pace et al, Mitchell 1, nw c 30-1s-2w	60	2152
Magnolia Pet. Co., Dickerson 1, nw ne se 24-1s-3w	*	4240
CREEK COUNTY—		
C. G. Tibbens O&G, Carter 3, cwl se nw 18-14-9e	40	2334
Sneed 3, sw c ne nw 18-14-9e	30	2332
Tidal Oil Co., Jim 2, nw c 31-15-8e	400	3765
Dixie Drlg. Co., et al, Bruce 1, nw c sw ne se 10-17-9e	*	2965
HUGHES COUNTY—		
Jarvis & Holm, Brown 1, se nw ne 17-7-8e	¶43	2930
MARSHALL COUNTY—		
Bilbo Oil Corp., Taliaferro 16, ne c nw ne se 14-5s-5e	*	660
MUSKOGEE COUNTY—		
Bement Oil Co., Fowler 4, ne c 5-13-16e	*	1633
OKLAHOMA COUNTY—		
Anderson-Prichard, Gibbons 3, sw se ne 2-11-3w	5120	6150
Graham 1, se sw ne 2-11-3w	5725	6195
J. C. Shaffer, Vinita Park 2, nw nw sw 2-11-3w	2655	6250
Hall & Briscoe, Holmes 2, sw c ne se 10-11-3w	19010	6290
I.T.I.O. et al, Precure 2, nw se se 11-11-3w	7940	6475
Wirt Franklin Pet. Corp., Page 1, sw c se 35-12-3w	5375	6265
Cromwell-Franklin Oil Co., Trosper-Park 34, nw se sw 12-11-3w	4685	6221
Anderson-Prichard, Habeggar 1, nw sw nw 14-11-3w	9945	6320
Government Pet. Co. 1, ne c nw 14-11-3w	1320	6200
I.T.I.O. et al, Huffman 2, nw c sw 14-11-3w	3955	6340
Spillman 2, ne nw se 14-11-3w	7330	6170

Tabulation and Comparison on page 64

Company, Well and Location	Initial Production Bbls.	Depth
Phelans Heights 2, se c ne 15-11-3w	1570	6350
OKMULGEE COUNTY—		
Bassinger et al, Fos 4, se c sw ne se 14-16-13e	*	2053
PAWNEE COUNTY—		
Jacob Fell, Gibbons 1, ne c se 31-21-9e	5	1068
Mid-Continent Pet. Corp., School land 36, ne sw se 36-20-5e	*	4100
Dr. Harrington et al, Townlot 1, c se ne 25-20-9e (owdd)	*	2026
PONTOTOC COUNTY—		
Universal Oil Co., Martin 1, ne c 36-5n-6e	*	1964
Slater 1, nw c 31-5-7e	*	4049
POTTAWATOMIE COUNTY—		
Atlantic Oil Prod. Co., Thomas 1, ne c nw 9-7-4e	255	3937
Lippa Drilling Co. et al, Helmerich 1, ne c nw 11-8-4e	*	4685
SEMINOLE COUNTY—		
Carter Oil Co., Coker 7, nw ne sw 2-8-5e	855	4189
Mid-Continent Pet. Corp., Bruner 5, se c 11- 7-6e	2125	3147
STEPHENS COUNTY—		
Barney Cockburn, Funk 2, sw c se 19-18-8w	15	2262
George Pace et al, Ing 1, sw c ne 20-1n-8w	*	2316
TULSA COUNTY—		
O. H. Parkening et al, Cowan 1, nw c sw se sw 7-19-14e	4	1280
Murray et al, McIntosh 1, sw c 20-19-14e	¶1	1332

KANSAS

Company, Well and Location	Initial Production Bbls.	Depth
BUTLER COUNTY—		
National Ref. Co., Settergren 1, nw c 32-26-4e	*	2898
Hedderman 1, (owdd) sw c ne 24-28-5e	*	3210
GREENWOOD COUNTY—		
Shull Drlg. Co., Johnson 1, ne se nw 16-24-12e	100	1562
Simmons et al, Harris 5, sw se nw 19-22-11e	75	2014
STAFFORD COUNTY—		
Midwest Explor. Co., Richardson 36, se c 36-22-12w	340	3541
Boucher et al, Sinclair 1, ne c 9-22-11w	*	3587
STEVENS COUNTY—		
Western Prod. Co., Burrows 1, c sw 31-34-37w	¶1¼	2685
Argus Prod. Co., Ratcliffe 3, c sw 8-33-37w	¶5	2590
Missouri Kansas Pipe Line Co., et al Youngren 1, ne se nw 24-32-39w	¶1½	2585
Argus Prod. Co., Ratcliff 4, c se 26-32-38w	¶3½	2583
Western Prod. Co., W.R.D. Fee 2, c nw 26-22-38w	¶11½	2602
W.R.D. Fee 3, c ne 24-32-38w	¶14	2515
W.R.D. Fee 1, c se 21-32-38w	¶11¼	2540
Argus Prod Co., Porter 1, c se 9-32-37w	¶3	2576

NORTHWESTERN OHIO

Company, Well and Location	Initial Production Bbls.	Depth
SENECA COUNTY—		
O'Neil & Co., Lyon 1	12	....
HARDIN COUNTY—		
Barnaby & Co., Kurt 1	¶½	1380
Kurt 2	¶¾	1344
Wiser Oil Co., Geiger 3	25	1380
Bert Sheldon & Co., Schwemmer 1.	¶¼	1375
Kurt 1	¶½	....

PENNSYLVANIA

Company, Well and Location	Initial Production Bbls.	Depth
GREENE COUNTY—		
Natural Gas Co. of West Virginia, Ackley 1	*	....
BUTLER COUNTY—		
McNanny Oil Co. Mowery Hrs. 1	¶½	....

WEST VIRGINIA

Company, Well and Location	Initial Production Bbls.	Depth
COLEMAN COUNTY—		
Virginia Gasoline & Oil Co., Elliott 3	5	....
Hope Natural Gas Co., Shaffer 7499	¶1	2046
DODDRIDGE COUNTY—		
Pittsburgh-West Vihginia Gas Co., Spurgen 4993	¶¼	1871
RITCHIE COUNTY—		
Park Bowser, Morris & Grimm 3	¶½	2111
W. H. Bickel, Wolfe 1	2	2030
ROANE COUNTY—		
United Fuel Gas Co., Kieffer 2	¶½	....
MARION COUNTY—		
Owens-Illinois Glass Co. Snell 141.	¶1	1993
HARRISON COUNTY—		
Reserve Gas Co., Sommerville 805	¶1	3058
GILMER COUNTY—		
Philadelphia Natural Gas Co. Webster 1	¶¼	....

KENTUCKY

Company, Well and Location	Initial Production Bbls.	Depth
HART COUNTY—		
Norris & Davis, Lew McKinney 2	500	650
Hatcher 1	125	....
Taylor 1	¶2	....
Warder & Norris, Garvin 1	300	....
H. Z. Clark & Co. Lagrand School lot 1	200	....
OHIO COUNTY—		
National Bros. Jenkins & Co. 1	50	1561
G. H. Rice, Trus. Nation 1	50	1576
Kentucky Natural Gas Co. Reynolds 3	¶1¼	....
Brenner & Adams, Bellamy 4	20	....
HENDERSON COUNTY—		
Imperial Oil & Gas Products Co. Duncan 1	4	....
Triplet 5	4	....
DAVIESS COUNTY—		
George Randolph, Cravens 1	*	....
Daley & Daley, Walters 1	*	1520
HANCOCK COUNTY—		
H. C. Smith, Stout 1	25	....
McLEAN COUNTY—		
Jas. C. Ellis, Sandefur 2	15	1206

SOUTHEASTERN OHIO

Company, Well and Location	Initial Production Bbls.	Depth
WASHINGTON COUNTY—		
Wilford Bros., Hasley 1	2	420
First National Bank of Marietta, Herlan & Co. 39	3	447
Thomas & Co. Deweese 8	3	276
Cliff Oil & Gas Co. Holland 1	¶1	1916
MONROE COUNTY—		
Shay McMullan & Co. Cronin 2	3	1841
William Morrison & Co. Morrison 1	*	1570
B. C. Robinson, Young 6	3	1002
MORGAN COUNTY—		
Ohio Fuel Gas, Strode 1	¶¼	1516
Williams Bros. Hann 1	¶1¼	800
Whitener & Co., Starrett 3	*	230

CENTRAL OHIO

Company, Well and Location	Initial Production Bbls.	Depth
ATHENS COUNTY—		
Bowser Oil & Gas Co., Ahrendt 1	*	1183
Ohio Fuel Gas Co., Woode 2	¶3¼	1230
Kachelmacher Estate, Wilson 1	*	3203
Carpenter & Glazier, Curtiss 13	*	90
Curtiss 14	*	171
GUERNSEY COUNTY—		
East Ohio Gas Co., Gadd 3	60	3514
George Jewell & Co., Beal Hrs. 1	10	3634
Ernest Walters & Co., Messer 1	10	3536
MUSKINGUM COUNTY—		
The Preston Oil Co., Stokely 1	60	3514
Ohio Fuel Gas Co., Leland 1	¶¼	3806
McLaughlin Bros. Vensel 6	1	1035
LICKING COUNTY—		
Norpell & Co., Weakley 2	*	788
Emerald Petroleum Co., Babcock 1.	*	2973
Ohio Fuel Gas Co., Watkins 1	*	2383

Company, Well and Location	Initial Production Bbls.	Depth
ASHLAND COUNTY—		
Robinson & Co., Sellers 4	2	659
Mill & Co., Walter 1	*	744
PERRY COUNTY—		
Shenker & Co., Culp 1	¶¼	2961
Perry Sturm, Somerset Fair Grounds 1	*	2995
TUSCARAWAS COUNTY—		
Capital Drilling Co., Little 4	¶¼-50	2995
MEDINA COUNTY—		
Edson Co., Franks 5	6	469
LORAIN COUNTY—		
Ohio Fuel Gas Co., West View Property Co. 1	¶2¼	....
KNOX COUNTY—		
Upham Gas Co., White 1	¶1¼	2942
ATHENS COUNTY—		
Ohio Fuel & Gas Co., Sunday Creek Coal 96	¶¼	3392

INDIANA

VIGO COUNTY—		
Stosi Oil Corp., Thomas 3	20	....

ILLINOIS

WABASH COUNTY—		
J. D. Toomey & Co., Buchannan 12	14	1519
Robinson Oil Co., Schaffer 2	*	1575
ST. CLAIR COUNTY—		
The Ohio Oil Co., Shondy 3	50	633
McDONOUGH COUNTY—		
Michigan-Illinois Oil Co., Clark 2	1	500
CRAWFORD COUNTY—		
W. C. McBride Inc., Oldham 1	¶¼	870
MARION COUNTY—		
Lloyd Bryant & Co., Bryant 1	10	1647
RANDOLPH COUNTY—		
T. J. Collins & Co., Paulter Hrs. 1	*	620

MISSOURI

ST. FERDINAND COUNTY—		
St. Elco Development Co., Young 1	*	1000

MICHIGAN

ISABELLA COUNTY—		
Stork Oil Co., Sawada 2	264	3570
The Pure Oil Co., Burrows 1	189	....

NORTH LOUISIANA

CADDO PARISH (Vivian)—		
Bayou State Oil Corp., D. F. Barr 4, 30-22-15	40	1072
MOREHOUSE PARISH (Monroe)—		
Ouachita Nat. Gas Co., Cole 2, 13-20-4e	¶2	2183
RICHLAND PARISH—		
Southern Carbon Co., G. Harris 1, 10-16-6e	¶37	2457
SABINE PARISH (Zwolle)—		
R. L. Gay, Tr., Peterson 1, 31-8-12	100	2400
Pugh & Hickman, Sabine Lbr. Co. 1, 34-8-12	*	2650
Loring Oil Co., Sabine Lbr. Co. 2, 34-8-12	*	2600
UNION PARISH—		
Greenwood Prod. Co., Norsworthy 5, 9-21-3e	¶1¼	2300

SOUTH LOUISIANA

EAST HACKBERRY—		
Yount-Lee, Kelso Bayou State 32	350	3910
EVANGELINE—		
Cline, Smith & Cline, Conklin 10, dd	*	3350
NAPOLEONVILLE—		
Tex. Gulf Sulphur Co., J. & A. Landry 1, 42-12s-13e	*	1735
ROSE DOME—		
Gulf, Buras Levee Board 1, 27-21s-30e	*	250
SULPHUR—		
Union Sulphur Co., Fee 762	835	4790

TEXAS

TEXAS GULF COAST

BARBERS HILL—		
Sinclair, Smith 1, w flank, offset Sun Winfree 1	2275	5212
Rio Bravo, A. M. Fisher 1	*	6754
HULL—		
The Texas Co., Barrow Fee 3	1000	4110
BIG CREEK—		
Navarro Oil Co., J. H. P. Davis 5	*	4420
PETTUS—		
Union Producing Co., Ray 23	925	3919
PIERCE JUNCTION—		
Shaw et al, Fitzsimmons B-2, dd	500	4800
REFUGIO—		
Moody-Seagraves, O'Connor 5	200	5756
Strauch 1, Blk. 65	900	6454
SARATOGA—		
Rio Bravo Oil Co., Cotton 92-A	¶2	530
Cotton 100-A	¶2	540
SOUTH LIBERTY—		
Sun Oil Co., Mitchell 24, dd, pumpg	90	970
SPINDLE TOP—		
Yount-Lee Oil Co., McFadden 52, dd	12	2840
McFadden 142, salt water	*	5530

SOUTH TEXAS

BEXAR COUNTY—		
Gatlin Oil Co., Mrs. Anna Beck 2	25	700
CALDWELL COUNTY—		
Anderson et al, S. J. Barber 1	40	2245
CHAPMAN—		
Anderson et al, Lawrence 3	3000	1501
Lawrence 8	250	1890
E. L. Chapman, Abbott 4-D	300	....
Tom Patton, Abbott 1	200	....
E. R. Marts et al, Simmons 5	400	....
G. Stratton, Abbott 5	150	1834
DUVAL COUNTY—		
Slaon et al, Luby 1	*	....
DARST CREEK—		
Gulf Ref. Co., Posey-Baker 9	1070	2584
Humble O&R Co., Sallie Wilson 7	175	2623
Louisiana Oil & Ref. Co., Thomas Dix 8	2000	2560
Thomas Dix 9	2500	2575
STARR COUNTY—		
J. L. Smith, Welsh 1	¶4	377
ZAPATA COUNTY—		
W. R. Shankle, Trevino 15	100	1258
S. R. C. Oil Corp., Cuellar 12-B	50	1222

TEXAS PANHANDLE

GRAY COUNTY—		
British-American Oil Co.-Shell Pet. Corp., Richardson 1	100	3290
Magnolia Pet. Co., J. E. Cubine 2	¶35	2321
R. J. Sailor 4	175	3212
Gulf Prod. Co., R. B. Thompson 2	235	3244
HUTCHINSON COUNTY—		
Midwest Explo. Co., C. R. Garner 1-C	105	3075
MOORE COUNTY—		
Shamrock O&G Co., Coffee 1	350	3205
Texas Interstate P. L. Co., Sneed (Sec. 48) 1	¶8	2564

NORTH TEXAS

ARCHER COUNTY—		
C. B. Christie et al, Hamilton 1	*	1301
Dean & Alexander, Arnold 1	15	1176
Hedrick-Camp Drlg. Co., Inman 1	*	753
Humble O&R Co., Hudson 2	*	1414
Perkins-Cullum & Humble, Falls 2	*	1634
COOKE COUNTY—		
D. Atkins et al, Dougherty 1	*	1501
Bourland Royalty Co., Sitzes 1	*	2003
DENTON COUNTY—		
Benson Bros. & The Texas Co., Yeatts 1	*	1670
GRAYSON COUNTY—		
C. E. Marshall et al, Mauldin 1	*	1008
E. Price et al, Jewell 1	*	2520
THROCKMORTON COUNTY—		
Knox et al, Reynolds 1	10	540
Reynolds 2	9	530
WICHITA COUNTY—		
Comac Drlg. Co. et al, Boyd 1	*	1856*
Walton & Blair, Honaker 4	35	855
YOUNG COUNTY—		
Atlantic Oil Prod. Co. et al, Jarnigan 1	*	2689
B. C. Banner et al, Finch 1	165	663
J. A. Bearman et al, Baldwin 1-B	*	710
Consolidated Oil Co., Bailey 1	*	952
W. H. Hammon et al, Bullock 1-B	*	950
R. L. Hayes et al, Clifton 1	*	1003
Mason & Fitzgerald, Routon 1	*	757
E. R. Riggs et al, Larimore 1-A	110	709
E. J. Stump et al, Jeffery 1	*	1079
R. J. Watson et al, Watson 1	*	804

CENTRAL WEST TEXAS

BROWN COUNTY—		
Cox et al, Trueheart 1	*	1165
CALLAHAN COUNTY—		
Glengary Oil Co., West 1	*	1163
COLEMAN COUNTY—		
Barnsdall Oil Co., Golson 1	300	1592
Prairie O&G Co., Golson 1	310	1580
EASTLAND COUNTY—		
Hopkins et al, Jones 1	*	850
SHACKELFORD COUNTY—		
Graham & Hunter, Elliott 1	*	2177
Hicks & Hubbard, Mathews 1	25	803
G. P. Mitchem et al, Nail 3	*	1372
STEPHENS COUNTY—		
Clements et al, Stanley 1	¶¼	3960
Southern Pet. Explo. Co., Drummond 1	*	540

WEST TEXAS

CRANE COUNTY—		
Gulf Prod. Co., J. T. McElroy 85	400	2972
Prairie O&G Co., University 7	180	3060
ECTOR COUNTY—		
Humble O&R Co. et al, York 11	1000	3700
Landreth Prod. Corp., University 6-S	350	3599
PECOS COUNTY—		
Culberson Bros. Co., Tippett 1	160	401
C. L. Dittman Drlg. Co. et al, H. J. Eaton 1	50	1580
Dixie Oil Co., Tippett 5	90	442

CENTRAL EAST TEXAS

VAN ZANDT COUNTY—		
Pure Oil Co., Free Methodist Church (2-ac) 1	6000	2933
A. G. Maxfield 2	5000	2956
O. L. & L. L. Swain (43.8-ac) 2	3500	2952

NEW MEXICO

EDDY COUNTY—		
Leonard & Levers, State 4, Sec. 21-17s-29e	¶5¼	2278
Lockhart & Co., Parks 2, Sec. 23-17s-30e	¶1-115	3419
LEA COUNTY—		
Amerada Pet. Corp., State 4-B	¶15-25,175	4214
Hobbs-High, Inc., Tatum 1	*	4356
Tidal Oil Co., B. Hardin 2	¶8¼-10,594	4240
B. Hardin 3	9000	4220
Texas Pacific Coal & Oil Co., State 2-G	6000	4218

Santa Fe Springs Deep Test

Los Angeles.—George F. Getty is coring at some level below 9200 feet in No. 48, a deep test at Santa Fe Springs, but is withholding information as to exact depth or formations. Estimates on the depth of the well run up to 9500 feet, but counting of the drill pipe indicates a shallower hole. The test is a very important one but there is no positive evidence that probable producing zones have been cut below the 8500-foot level. Oscar Howard reached a depth of 9356 feet in Hathaway 7 and apparently still holds the record.

El Dorado, Arkansas.—Under an arrangement just completed Root Refining Company is delivering to the Kettle Creek Refining Company 500 barrels daily of Champagnolle (Rainbow City) crude oil. The arrangement is to continue for an indefinite period.

Lion Oil Refining Company has bought the holdings in south Arkansas of Sun Oil Company for an announced consideration of $150,000. Sun Oil Company has a daily average oil production of about 700 barrels.

PERMITS GRANTED FOR NEW WELLS

ARKANSAS

PIKE COUNTY—E. R. Henderson's J. L. Lee 1, 400 ft s 350 ft e nw cor sw¼ se¼ 21-8-23.

SEBASTIAN COUNTY—Ozark Natural Gas Co.'s Lawrence Wright 14, center of nw¼ ne¼, 29-8-30.

JOHNSON COUNTY — River Valley Gas Development Co.'s W. F. Collier 1, 350 ft s, 330 ft e nw cor se¼ se¼.

MILLER COUNTY—Vincent Lenz's G. W. Johnson 3, 150 ft n, 250 ft w se cor ne¼ nw¼ 24-15-26.

COLUMBIA COUNTY—J. W. Olvey's Kate George 1, 200 ft n, 240 ft e sw cor nw¼ se¼ 19-18-20.

CALIFORNIA

KERN COUNTY—Bankline Oil Co., Orloff 1, 26-11-24. Shell Oil Co., Porter 1-1, 29-30-29.

KETTLEMAN HILLS—Associated Oil Co., Whepley 2, 35-21-17.

LONG BEACH—George F. Getty, L. B. 30, 29-4-12. Shell Oil Co., Cherry Hill Comm. 9, 29-4-12.

LOS ANGELES COUNTY — McKeon Oil Co., Western 1, 1-3-14.

OJAI—Knudsen-Schmidt Co., No. 1, 12-4-23.

PLAYA DEL REY—Balboa Oil Co., No. 1, 28-2-15. Dennis and Palmer, No. 1, 21-2-15. Mohawk Pet. Co., No. 2, 28-2-15. Bergman-Albright Oil and Gas Co., No. 3, 21-2-15. Mohawk Pet. Co., L-2, 28-2-15. Senator Oil Co., Senator 1, 21-2-15. Philco Pet. Co., No. 1, 28-2-15. Thos. Kelley and Sons, P. E. 1, 28-2-15; Prentiss-Kelly 3, 28-2-15. La Canada, No. 5, 28-2-15. George F. Getty, V-7, 28-2-15. Metropolitan Oil Corp., No. 2, 28-2-15. Bishop Corp., Venice 2, 28-2-15.

SAN BERNARDINO COUNTY — Sancol Properties, No. 1, 18-1-14.

SAN DIEGO COUNTY—J. Russell Jones, Pueblo Lot 212, City of San Diego, No. 1,.

SAN LUIS OBISPO COUNTY—C. Shockley, No. 101, 13-32-12.

VENTURA—Associated Oil Co., McGonigle 10, 23-3-23.

OKLAHOMA

CREEK COUNTY — C. G. Tibbens O&G, Carter 4, csl se nw 18-14-9e; Tibbens O&G, Sneed 4, sw c ne nw 18-14-9e; C. G. Tibbens O&G, Wilson 1, nw c se 18-14-9e; Bryan Pet. Co., Jackson 3, se c nw sw 8-16-11e; C. O. Buckles & Loomis, Replogle 1, nw c ne sw 10-17-8e; C. O. Buckles, Coonrod 1, sw c ne sw 3-19-9e; Phillips Pet. Co. et al, Hollingsworth 1, nw c se se, 30-19-9e.

GRADY COUNTY—Natural Gas Prod. Co., Ridley 2, sw c nw sw ne 25-4n-8w.
Co., Hughes 1, c nw nw 16-6-17e.

LATIMER COUNTY — Cities Service Gas Co., Hughes 1, c nw nw 16-16-17e.

LINCOLN COUNTY—Meade Bros., Meadville 3, c sw sw 25-17-3e.

MUSKOGEE COUNTY—Moore & Crow 1, c se sw 31-12-19e; Cooper & Crow, Prince 1, csl sw sw 3-16-16e.

OKLAHOMA COUNTY—Rajah Inc., 1, ne c sw nw nw 2-11-3w; Tampa Oil & Okla. Drlg. Co., Durham 1, sw c nw nw 2-11-3w; Phillips Pet. Co., Othenin 1, nw c sw ne ne 3-11-3w; Dingeil Oil Co., Hile 1, se c ne ne nw 10-11-3w; Anderson-Prichard Oil Corp. & Phillips Pet., Wright 1, cwl ne sw ne 10-11-3w; Anderson-Prichard & Phillips, Ferguson 1, nw c sw nw ne 10-11-3w; British American Oil Co., Chattam 1, ne c nw se nw 10-11-3w.

OKMULGEE COUNTY—Babcock Bros. 1, se c sw se nw 1-14-14e; LeBean Drlg. Co., Bruner 7, c ne sw 23-15-11e; Bassinger et al, Fox 5, c ne se 14-16-13e.

OSAGE COUNTY — Mid-Continent Pet. Corp. 2, nw sw ne 34-20-10e; Gillespie & Sons 16, se nw ne 8-20-12e; W. D. Gray et al 7, nw se nw 19-22-11e; Bacon & Voyles 7, ne nw sw 30-23-9e; Utilities Prod. Co. 23, se c nw sw 6-26-7e; John W. Fitzgerald 1, nw c sw 26-27-11e.

Tabulation and Comparison on page 64

PAWNEE COUNTY—Brewer et al, Needham 1a, cel nw ne 1-20-7e.

PAYNE COUNTY—Deep Rock Oil Corp., Harris 1, ne c sw 9-18-5e.

PITTSBURG COUNTY — M. J. Sullivan, Trustee Kohler 2, nw ne ne 15-7-18e; Apex Oil Co. Haskett 2, csl se nw 18-7-18e.

POTTAWATOMIE COUNTY—W. J. Martin et al, Brown 1, ne nw sw 2-9-4e; Magnolia, Alexander 1, ne c 27 6-3e; Wilcox O&G, Warren 8, se ne sw 23-6-3e; Payne et al, Bullock 4, nw se ne 22-6-3e.

SEMINOLE COUNTY—Houston Oil Co., Mainard 1, se c 24-8-7e; Ligon & Todd, Townlot 2, sw ne ne 30-8-8e; Ramsey Pet. Co., Davis 3, se ne nw 30-8-8e; Deep Rock, Douglas 2, ne sw ne 30-8-8e.

STEPHENS COUNTY — Empire Gas & Fuel, Miller 2, cel ne ne 5-2s-8w (owdd); Dixie et al, Pitt 3, sw c ne nw se 3-2s-8w; Slab Oil Co., Malechi 2, (owdd) se c sw ne 31-1n-8w; H. O. Pope, Brown 1, ne c nw 31-4n-7w.

TULSA COUNTY—McCune et al, Jefferson 1, cnl ne se 23-19-11e; Murray et al, McIntosh 2, csl sw se 17-19-14e.

WAGONER COUNTY — Western Dev. & Elec. Co., Barnett 6, ne c se ne 34-18-17e.

KANSAS

COWLEY COUNTY—Pyle et al, Pudden 1, c se ne 16-35-4e (owdd); Suppes et al, Graham 1, sw nw se, 33-32-7e. Lewis Prod. Co., Roberts 1 "A", ne c sw 12-32-4e. Roth & Faurot, Holt 4, nw c se 12-32-4e.

ELK COUNTY—Ferguson et al's Ferguson 1, (owdd) sw ne sw 23-30-8e.

ELLIS COUNTY—Deep Rock Oil Corp.'s Perry 1, ne c se 19-11-17w.

LYON COUNTY—Sheedy et al's Welch 1, se c nw 31-20-10e.

MARION COUNTY — Harwood Oil Co.'s Tolman 1, se nw sw 11-17-4e.

McPHERSON COUNTY—Lario O&G and Shell's Ritz 1, ne c sw 1-20-2w; McPherson O&G Devel. & Shell's Myers 1, c ne ne 14-19-2w; McPherson O&G & Shell's Griffin 1 "B", c sw ne 14-19-2w; Reserve Oil Co. & Shell Pet. Corp.'s Ritz 1, se c sw 31-19-1w; Helmerick & Payne & Dixie Oil's Boesker 1, nw c ne 18-20-1w.

RICE COUNTY—Stearns & Streeter et al's Blake 1, ne c nw 9-18-10w.

RUSH COUNTY—Boyle, Grossman et al's Greenwalt 1, c sw 17-19-16w.

RUSSELL COUNTY—Liggett et al's Whitson 1, sw nw sw 16-11-15w.

SEDGWICK COUNTY — National Refining Co.'s Gselle 1, se sw se 1-27-1e.

STEVENS COUNTY—Missouri Kansas Pipe Line Co. et al's Gregory 1, c sw 31-33-38w.

SUMNER COUNTY—W. K. Mann's Herrick 2, nw c sw sw se 25-31-2e.

LOUISIANA

BIENVILLE PARISH — Jamestown Synd., Cotton Valley, J. J. Lawhon 1, 15-16n-8w, 200 ft n and 200 ft e of sw cor se¼ ne¼.

BOSSIER PARISH—Rambaugh O&G Co., Benton, J. S. Allison 1, 10-19n-13w, 1620 ft w and 300 ft n of se cor of sec. La. Oil Refg. Corp., Shreveport, Bodcaw Fee B-14, 11-19n-11w, 330 ft n and 400 ft w of se cor se¼ of sw¼.

CAMERON PARISH—Freeport Sulphur Co., Freeport, Gulf Land Co. 6, 7-12s-12w, 1700 ft n and 1400 ft w of se cor of sec.

CLAIBORNE PARISH—The Prairie O&G Co., Independence, Kansas, F. E. Shackleford 1, 30-23n-5w, 1650 ft from n line and 1650 ft from w line of ne¼ of sec.

IBERVILLE PARISH—Gulf Refg. Co. of La., Plaquemine, Wilberts Myrtle Grove Pltg. Co. 5, 53-9s-11e, 4440 ft s and 65 ft w of ne cor of sec.

LA SALLE PARISH — Montague Oil Co., Zenoria, Zenoria 8, 10-9n-1e, 600 ft s and 100 ft w of ne cor of sec; Zenoria 9, 10-9n-1e, 160 ft s and 600 ft w of ne cor of sec; Zenoria 10, 11-9n-1e, 160 ft s and 160 ft e of nw cor of sec.

SABINE PARISH—Mr. R. L. Gay, Zwolle, Sabine Lbr. Co. A-1, 1-7n-12w, 212 ft s and 170 ft e of nw cor se¼ of ne¼. Lacy Jessup Oil Co., Shreveport, Brown Lbr. Co. 1, 28-8n-10w, 330 ft s and 330 ft e of nw cor se¼ ne¼. Lacy Prod. Co. Shreveport, W. M. Cooper 2, 32-8n-11w, 330 ft n and 330 ft w of se cor sw¼ of nw¼ of sw¼. Pelican Nat. Gas Co., Shreveport, La. Long Leaf Lbr. Co. 6, 4-7n-11w, 200 ft n and 200 ft w of se cor nw¼ of sw¼. The Texas Co., Houston, Maines 1, 5-7n-11w, 990 ft s and 330 ft w of ne cor se¼. Triangle Pet. Co., Many, Sabine Lbr. Co. 1, 36-8n-12w, 330 ft n and 330 ft e of sw cor sw¼ of sw¼.

UNION PARISH — Greenwood Prod. Co., Shreveport, Norsworthy 2, (amended location), 9-21n-3e, 1336 ft e and 749 ft n of sw cor of sec; Norsworthy 4, (amended location), 9-21n-3e, 1320 ft s and 749 ft e of nw cor of sec; Norsworthy 3, (amended location), 9-21n-3e, 1336 ft e and 1980 ft n of sw cor of sec.

TEXAS

BEE COUNTY—Union Prod. Co., Houston, G. A. Ray, 737, 25, P. Miller sur, 1400 ft from e and 1700 ft from s line sur. Simms Oil Co., Dallas, Holzmark, 1116, 2, J. A. York sur, 660 ft n of No. 1.

BASTROP COUNTY — Schimmel & Batts, R. M. Trigg, 1400, 2, Jas. Stewart sur, 975 ft s of No. 1.

BEXAR COUNTY—W. A. Biel, Von Ormy, Fee 160, 2, J. S. Simpson No. 59 sur, 300 ft ne of No. 1.

BRAZORIA COUNTY — Quintete Oil Co., Alvin, J. M. Speer, 529, 1, S 40, B 2, HT&B sur, 300 ft from n and 500 ft from e line sec.

BROWN COUNTY — McGinty & Neal, Brownwood, W. D. McCristy, 84, 1, S 77, B 210, KCSL sur, nw corner of blk 210. R. C. McCarter et al, Rising Star, D. C. Hazelwood, 63, 1, No. 787, S. Saunders sur, 200 ft from s and w lines.

CALLAHAN COUNTY — W. B. Flynn, Beaumont,T. J. Kelley, 320, 23, 2281, TE&L sur, ne corner. Meredith & Benton, Cisco, R. L. Berry, 80, 2, S 70, Bayland Asy. sur, 1445 ft from e and 150 ft from s line.

CALDWELL COUNTY—J. E. Mills et al, Taylor, S. F. McMahan, 50, 1, J. Pinchback sur, 270 ft from n and 70 ft from w line.

COLEMAN COUNTY—G. F. Aldrich, Coleman, Sealy, 160, 3, S 87 GH&H sur, 1020 ft w of No. 2. Arcadia Refg. Co., Coleman, F. Golson, 80, 5, S 164, I. Harris sur, 420 ft s of No. 3.

DUVAL COUNTY—S. R. & C. Oil Corp., San Antonio, Duval Ranch, 640, 2, S 293, B 3, 820 ft s of No. 1; 1, 475 ft w of center of e line.

EASTLAND COUNTY — W. H. Lobaugh, Eastland, Kimbrough, 49, 1, S 44, B 4, H&TC sur, 150 ft from s and e lines.

ECTOR COUNTY—Southern Crude Oil Pur. Co., Fort Worth, J. M. Cowden, 3242, 2, S 34, B 43, T&P sur, 660 ft from n and e lines of sec.

GRAY COUNTY—North American Oil & Gas Co., Amarillo, Sullivan, 1, S 160, B 3, I&GN sur, center of se¼. Operators Royalty & Prod. Co., Fort Worth, W. W. Harrah, 120, 5, S 150, B 3, I&GN sur, sw cor of ne¼ of ne¼; 6, se cor of sw¼ of ne¼. Texas Co., Wichita Falls, J. E. Williams, 400, 8, S 7 B 1, ACH&B sur, 330 ft from n and 990 ft from e line of sec. Magnolia Pet. Co., Dallas, J. S. Morse, 320, 1, S 5, B 26, I&GN sur, 350 ft from n and w line of s½ ne¼;D. Edington, 160, 1, S 34, B 2, H&GN sur, 330 ft from n and e lines of sec.

GRIMES COUNTY — H. R. Cullen, Houston, P. B. Bookman, 143, 1, M. Barrett sur, 188 ft from n and e lines of sur.

GUADALUPE COUNTY — Humble O&R Co., Houston, L. G. Denman, A, 300, 20, A. S.

Emmett sur, 450 ft from ne and 2588 ft from se cor; 19, 300 ft nw of No. 20.

HARDIN COUNTY — Rio Bravo Oil Co., Houston, Fee, 158, 792B, J. F. Cotton sur, 200 ft w and 70 ft n of No. C83A; C100B, 4 ft of No. C100A. East Batson Oil Co., Batson, Gulf, 2, 8, BBB&C sur, 103 ft from w and 123 ft from s line.

HARRIS COUNTY—Cullen & West, Houston, P. S. Griffith, 96, 1, T. W. Marshall sur, 3000 ft from n and 300 ft from w line.

HAMILTON COUNTY — C. W. Garrett, Waco, F. Rieve, 360, 1, Brooks sur, 150 ft e of center of w line.

HUTCHINSON COUNTY — Sinclair O&G Co., Fort Worth, E. B. Johnson, B, 320, 1A, S 32, BY½B sur, 330 ft from n and 430 ft from e line w½.

LIBERTY COUNTY—H. S. Smith, Houston, W. D. Kynerd, 60, 1, S 31, GC&SF sur, 400 ft from s and 1400 ft from e line.

LAMPASAS COUNTY — Thomas & Malcolm, San Antonio, W. M. Aynesworth, 325, 1, Jas. Fisher sur, nw cor of blk 76.

LIMESTONE COUNTY — J. H. Kirby, Groesbeck, W. D. Bates, 86, 1, M. R. Palacious sur, 1333 ft from w and 450 ft from s line.

LIVE OAK COUNTY — Houston Oil Co., Houston, J. B. Dunning, 561, 3, M. B. Kivlin sur, 330 ft from ne and 2800 ft from nw line; Jacob, Buzzini & Pickett Inc., San Antonio, C. E. Key, 191, 1, B. Fadden sur, 750 ft from ne and 1250 ft se line blk 26.

LOVING COUNTY—Lockhart & Co., Pecos, R. L. Allen, 4, S 82, B 33, H&TC sur, 440 ft from ne and se line of sec.

MILAM COUNTY—W. H. Birdwell, Rockdale, C. H. Coffield, 100, 1, T. J. Chambers sur, 150 ft from n and w lines. H. W. Elliott, Thorndale, J. T. Davis, 401, 1, H. Gray sur, 1138 ft from w and 2475 ft from s line.

MOORE COUNTY—North American O&G Co., Amarillo, Bivins, 193, 1, S 93, B 46, H&TC sur, 1320 ft from n and e lines. Texas Inter-State Pipe Line Co., Amarillo, T. Thompson, 80, 1, S 23, B 44, H&TC sur, center of n½ of ne¼.

NEUCES COUNTY — South Texas Prod. Co., Houston, O. Walter, 3, Los Sauces sur, 800 ft from n and 400 ft from e line.

PANOLA COUNTY—Texas Louisiana Prod. Co., Houston, F. A. Baker, 56, 1, B. J. Cordan sur, 1000 ft from s and 550 ft from e line.

PALO PINTO COUNTY—Ashe Synd. No. 2, Fort Worth, L. E. Seaman, 1, S 3, B 2, T&P sur, 330 ft from s and e lines of sec. Abbott & Ford, Granbury, Lee, 232, 5, B 14, S. Townsend sur, 700 ft from n and 1100 ft from e line.

REAGAN COUNTY—T. B. Slick Est., Oklahoma City, A. August, 640, 1, 1216 GC&SF sur, center of se¼.

RED RIVER COUNTY — Droppleman & Bundy, Deport, J. W. Cunningham, 180, 1, S. V. Shi sur, 250 ft from s and e lines.

REFUGIO COUNTY — Union Prod. Co., Houston, F. V. W. Heard 1, 11, Refugio sur, 150 ft from n and w lines.

ABBREVIATIONS

NOTE—The following is the explanation of abbreviations, signs, etc., used in completion and wildcat reports: °—dry hole, abandoned well; ‡—salt water; †—junked and abandoned; ¶—million feet of gas; abn—abandoned; bbls—barrels; b.s.—basic sediment; cas—casing; co—cleaning out; dk—derrick; dr—drilling; fsh—fishing; ft—feet; in.—inches; lcn—location; m—milling; n, s, e, w—north, south, east, west; r—reaming; sd—shut down.. sdtr—sidetracking; sp—spudding; sr — straight reaming; std—standardizing; sw—salt water; td—total depth; ur—underreaming; wo—workover; wosr—waiting on standard rig.

RUSK COUNTY—J. K. Lewis et al, Dallas, O. C. Jones, 15, 1, Wm. Brown sur, 250 ft from w and 150 ft from s line.

SHACKLEFORD COUNTY—Wylie & Sons et al, Albany, T. A. Deats, 40, 1, S 20, B 11, T&P sur, 150 ft from s and e lines of sec. Carter Dev. Co. Fort Worth, J. H. Nail, 160, 1, S 137, ET. Ry. sur, 150 ft from n and e lines of sw¼. J. A. Balde, Albany, English, 80, 1, S 44, L.A.L. sur, 300 ft from e and 1200 ft from s line. E. L. Stratton, Albany, J. H. Elliott, 80, 1, S 19, L.A.L. sur, 1320 ft from w and 1170 ft from n line of sec.

THROCKMORTON COUNTY — T. B. Knox, Breckenridge, Reynolds, 160, 2, B 72, Comanche Res. sur. 310 ft n and 320 ft of No. 1. J. W. Robinson, Woodson, D. Molloch, 80, 1 908, TE&L sur, 150 ft from s and w lines; 2, 300 ft e of No. 1; 3, 300 ft n of No. 1; 4, 150 ft from n and w lines.

TITUS COUNTY—Deep Rock Oil Co., Fort Worth, E. L. McElroy, 200, 1, N. K. Lewis sur, 1320 ft from n and 1609 ft from w line.

UPTON COUNTY—Eppenauer Drilling Co., San Angelo, W. A. Chaney, 80, 3, S 18, B 3, MK&T sur, 330 ft from n and e line sw¼ of nw¼.

VAN ZANDT COUNTY—Pure Oil Co., Fort Worth, O. L. Swain, 40, 2, Jno. Walling sur, 250 ft from w and 200 ft from s line; M. P. Neill, 100, 1, Jas. Rose sur, 658 ft from n and 225 ft from w line; S. Allen, 30, 1, J. Prado sur, 200 ft from n and 835 ft from w line; W. F. Swain, 40, 3, Jno. Walling sur, 200 ft from w and 250 ft from s line. Humble O&R Co., Houston, Sanger, 100, 2, Jno. Walling sur, 200 ft from w and 806 ft from n line; A. J. Fowler, 95, 1, Wm. Daniel sur, 150 ft from s and e lines.

WARD COUNTY—S. J. Radford Co., Grand Falls, M. L. Johnson, 5, 1, S 11, B 5, H&TC sur, 150 ft from s and w lines.

YOUNG COUNTY — Pandem Oil Co. and Jacob O&G Co., Wichita Falls, W. J. Rhoades, 160, 1, W. W. James.

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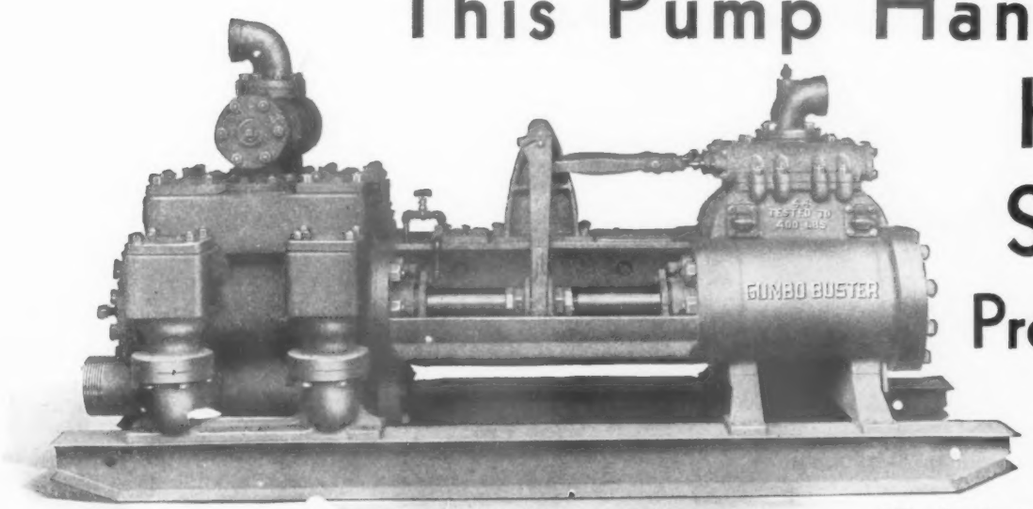

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The "GUMBO BUSTER" "G" Pump is the newest and largest of the "GUMBO BUSTER" line of slush pumps and is so designed that it will handle high steam pressures (up to 300 lbs.) and a corresponding high fluid end pressure. The steam end diameter is 14½"; water cylinder diameter is 7¼"; and length of stroke is 18". Weighing only 10,700 lbs., it is the lightest and strongest pump of its size and use because the fluid end is made of chrome nickel steel instead of cast iron. Wear on all moving parts is reduced by the long stroke, resulting in very economical operation.

SEE OUR DESCRIPTIONS IN THE COMPOSITE CATALOG

The fluid end consists of four separate pieces securely bolted together and riveted to steel skids. Each piece is cast from chrome nickel steel and is capable of withstanding any pressure up to 2000 lbs.

The water end valves and valve seats are of a new patented metal design. The valve is so constructed that the metal part of the valve comes in contact with the metal seat before the rubber insert. The pressure then forces the rubber insert in place forming a perfect seal. This construction relieves the rubber insert of shock when the valve seats and greatly increases the life of the insert.

The steam end is made of semi-steel and has a balanced piston valve. The steam end, the piston valves, and the two steam end legs are separate castings, and any one piece can be replaced.

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Cable and Rotary Tools

GENERAL OFFICES: HOUSTON, TEXAS

WILDCATS FROM ALL SECTIONS

WEST TEXAS

Completions

TOM GREEN COUNTY—
W. C. Pratt & Hancock, Lewis 1.. * 323
UPTON COUNTY—
Penn Oil Co.-Shell Pet. Corp., Anderson 1 ..... * 3730

ANDREWS COUNTY—Deep Rock Oil Co. et al's Kuykendall 1, rig. Fuhrman Pet. Corp.'s W. T. Ford 1, elev 3186 ft, flowing 150 bbls oil and some sulphur water at 4290-4613 ft and to plug back for shot.

BREWSTER COUNTY—Trans-Pecos O&G Co.'s Jones 1, elev 3073 ft, sd 2510 ft.

COCHRAN COUNTY — Continental Oil Co.'s Slaughter 2, lcn.

CONCHO COUNTY—Beesley et al's Waring 1, sp and sd. A. W. Turner et al's Brosig 1, sd 1520 ft.

CRANE COUNTY—Cranfill Bros. Oil Co. et al's J. T. Muir 1, elev 2499 ft, top salt 485 ft, top white lime 2330 ft, sd to set 6⅝ cas and flowing 1500 bbls sulphur water 3640-3712 ft. Cranfill & Gulf Prod. Co.'s J. B. Tubb 1, elev 2526 ft, salt 505 to 1400 ft, top brown lime 1415 ft, top white lime 2455 ft, making gas with light spray oil 4303-4488 ft, and fsh junk.

CROCKETT COUNTY—John W. Dieringer et al's Barnscorew 1, spd and sd. Magnolia Pet. Co.'s A. C. Hoover 2, elev 2521 ft, top salt 865 ft, top lime 1850 ft, shut in after pumping 10 bbls 31 gravity oil after shot 2038-56 ft. Taylor-Link Oil Co.'s Mary Bullock 1, dr 510 ft.

CULBERSON COUNTY—Grisham-Hunter Corp.'s W. D. Garren 2, sd 1520 ft. W. L. Kernrumpf et al's Garren 1, dr 1055 ft.

DAWSON COUNTY—Ray A. Albaugh et al's John Robinson 1, std rig.

ECTOR COUNTY—C. P. Davis et al's T. G. Hendrick 1, elev 2878 ft, top salt 1640 ft, top lime 4470 ft, dr 4820 ft. Southern Crude Oil Pur. Co.'s Cowden 2, dk. H. F. Wurtz et al's Ibbetson 1, elev 2840 ft, top salt 865 ft, dr 3100 ft.

EDWARDS COUNTY—Phillips Pet. Co.'s Holman 2, dr 6350 ft.

FISHER COUNTY — Condor Pet. Co. & Humble O&R Co.'s Wilson 1, elev 1879 ft dr 1260 ft. Cranfill-Reynolds Co.'s Flannigan 2, sd 3130 ft; Willingham 3, sd 3090 ft. The Texas Co.'s Dan W. Stephens 2-A, dr 1550 ft; M. Teagarden 2-B, dr 2020 ft.

GAINES COUNTY—Texas Consolidated Oil Co. & TP Coal & Oil Co.'s E. H. Jones 1, std rig.

GLASSCOCK COUNTY—F-H-E- Oil Co.'s J. W. Meek 1, dr 660 ft. Ed. Timberlake et al's Meek 1, sd 2965 ft. World Oil Co.'s McDowell 2-C, sd 660 ft.

TOM GREEN COUNTY—Belding & Dutton's Norsworthy 1, sd 765 ft. Mintex Oil Co.'s Campbell 1, sd 1835 ft. Phillips Petroleum Co. et al's Jennings-Gulden 1, elev 2016 ft, co 4990 ft.

HOWARD COUNTY—Greene Prod. Co. & Getty Pet. Corp.'s Denman 1, elev 2280 ft, top lime 1700 ft, pumped 70 bbls first 15 hrs at 2447-2770 ft, dr 2785 ft (SLM); Snyder 1, elev 2314 ft, top lime 1790 ft, fsh 2625 ft. McGinley-Sigler Co.'s Hyman 1-B, elev 2349 ft, dr 1660 ft.

HUDSPETH COUNTY—G. R. Theison et al's University 1, spd and sd.

IRION COUNTY—Central Oil Co. (W. E. Newton, Trustee's) H. Horney 2, dr 710 ft. Carl Cromwell et al's Tankersley 1, elev 2520 ft, sd 1712 ft. Straughan & Texannati Oil Co.'s Tankersley 1, elev 2306 ft, sd 1440 ft. F. E. Webb (Brazelton) et al's Williams 1, elev 2363 ft, sp and sd. P. H. Williams et al's Noelke 1, dr 2310 ft.

JONES COUNTY—McBest et al's Roberts 1, sd 1000 ft. C. R. Pope et al's Swann 1, top lime 2508 ft, swabbed 75 bbls oil at 2516 and 2534-35 ft. Yingling et al's Cade 1, rig.

LOVING COUNTY — Arkansas Fuel Oil Co.'s W. W. Dean 1, top salt 775 ft, cem cas 4125 ft. The California Co.'s Reagan-McIlvain 3, elev 2687 ft, top salt 726 ft, top Delaware 4201 ft, set 5 3/16 cas and testing production at 4220-29 ft; Reagan 5, top salt 770 ft, dr 1940 ft; Reagan 6, dr 610 ft. A. R. Eppenauer Drlg. Co. et al's Allen 1-A, top salt 850 ft, dr 2935 ft. Henshaw et al's Reagan-McIlvain 2 rig. Lewis & Slagel Drlg. Co.'s Cartwright 1, rig. Lockhart & Co.'s Allen 4, lcn. Miller-Burge & Healy's Chapman 1, top salt 750 ft, dr 4075 ft. Phillips Pet. Co.'s Wheat 2, top salt 775 ft, sd 2835 ft. Rush-Anderson & Moor's Wheat 1, dk.

MENARD COUNTY—J. C. Barnett et al's Callan 3, elev 2077 ft, sd for 5 3/16 cas and est. ¼ mil ft gas at 1814-14½ ft; Callan 4, lcn. L. G. Priest et al's J. P. Sorrells 1, elev 2279 ft, sd 2520 ft.

MIDLAND COUNTY—Kirwin et al's J. M. Mathena 1, top salt 1610 ft, dr 2150 ft.

MITCHELL COUNTY — Lewis & Slagel Drlg. Co.'s A. M. Bell 1, dr 1060 ft.

PECOS COUNTY—J. R. Bell et al's H. J. Eaton 1, lcn; Scharff-Blackman 1, dr 890 ft. Charlesworth-Messenger Oil Co.'s Butz 1, fsh 1105 ft. E. L. Chapman et al's Streety J, elev 2653 ft, sd 2210 ft. Cosby Prod. & Roy. Corp.'s Cordova 1, elev 2320 ft, top salt 725 ft, top lime 1850 ft, flow sulphur water, dr 2980 ft. C. L. Dittman Drlg. Co. et al's Eaton 2, lcn; Eaton (Sec. 37) 1, machine; Jackson 1, machine. Humble O&R Co.'s H. L. Kokernot 1, elev 3593 ft, top salt 2713 ft, top black lime 3981 ft, dr black lime 5890 ft; Mrs. C. L. Thompson 1-B, elev 3061 ft, dr 2805 ft. McCarty Oil Co.'s Gray 3, dr 540 ft. J. R. Miller et al's Bennett 1, sd 1700 ft. J. D. O'Mara et al's Bennett 1, sd 1230 ft. O. J. Perren et al's Eaton 2, elev 2437 ft, fsh 1765 ft. Pure Oil Co.'s Harrison 1, elev 3495 ft, top gray sandy-shale 4265 ft, dr 4310 ft. Rio Grande Oil Co.'s Webb 1, dr 1890 ft. Riser & White's W. D. Riser 1, sd 405 ft. Schelling & Slaughter's Yates 1, sd 340 ft. Sides & Cloyd's Blackstone-Slaughter 1, sd 2605 ft. Williams & Moran's Heiner-State 1, sd 765 ft.

REAGAN COUNTY—Big Lake Oil Co.'s University 179, dr by 4 strings tools, td 4003 ft; University 5-C, dr lime and shale 7320 ft. Group One Oil Corp.'s (Continental) University 4-B, dr shale 5623 ft. T. B. Slick Estate et al's A. August 1, dr 455 ft.

REEVES COUNTY—Biggs & Smith's Cherokee 1, sp and sd. The California Co.'s Kloh 1, elev 2798 ft, top black lime 4207 ft, top Delaware 4236 ft, pb from water at 4246 to 4242 ft and shot 150 qts 4202-40 ft and co with 100 ft oil and 3500 ft water in hole. May & Milton's Ellis 1, set 8¼ cas 1465 ft.

RUNNELS COUNTY — Boyce & Lamar's Lange 1, elev 1844 ft, sd 2643 ft. Chas. Dutton et al's G. W. Dean 1, fsh 1695 ft.

SCHLEICHER COUNTY—Delmar Oil Co.'s O'Harrow 1, elev 2421 ft, dr up junk 5576 ft,. Eastland Oil Co. Unit Plan's Tisdale 1, lcn. Munger-Wilson Oil Co.'s Page 1, elev 2270 ft, sd 5053 ft. Paul Teas & Walter Gant's Allison 1, sd 3960 ft. J. D. Wesner et al's R. E. Ratliff 1, sd 750 ft.

SCURRY COUNTY — Camp Springs O&R Co.'s Strayhorn 1, sd 875 ft. Mid-Kansas O&G Co.'s Peckham 1, elev 2155 ft, co with hfw 4373 ft. R. B. Pender O&G Co.'s Davis 1, elev 2208 ft, top salt 445 ft, ur to set 5 3/16 cas at 5000 ft. Seifert & Dibble's Blackburn 1, dr 715 ft.

STERLING COUNTY—W. C. Beesley et al's W. L. Foster 1, elev 2518 ft, dr 525 ft.

TAYLOR COUNTY — Adams-Ferguson & Hobbs' Lowe 2, making 1 mil ft gas 2301 ft, dr 2440 ft. Eastland Oil Co. et al's A. W. Hunter 2, dr 1550 ft. Herring et al's Richie 1, elev 1978 ft, sd 2570 ft. J. B. Jameson et al's Webb 1, elev 1905 ft, dr 6232 ft. Sanger et al's Abilene fee 1, elev 1719 ft, dr 1264 ft. Sanger O&R Co.'s Osborn 1, rig.

TERRELL COUNTY—Big Bend Oil Corp. et al's Bassett 1, elev 2396 ft, dr 2670 ft. Mid-Kansas O&G Co.'s Goode 1, elev 2405 ft, fsh 5226 ft.

VAL VERDE COUNTY—O. O. Owens et al's Mills 1, elev 2130 ft, sd 6780 ft. Phantom Oil Co.'s Ingram 1, sd 3035 ft.

UPTON COUNTY—Gulf Prod. Co.'s J. H. Shirk 1, rig. TP Coal & Oil Co.'s King 1, machine.

WARD COUNTY—Alpine Oil & Dev. Co.'s Boogher 2, set cas 780 ft. Atlantic & The California Co.'s S. R. Allen 1, dr 825 ft. Empire Gas & Fuel Co.'s Sealy 1, rig. Gulf Prod. Co.'s Hutchings 4, elev 2639 ft, making 14 mil ft gas and spray oil dr rotary in lime 3102 ft; O'Brien 15, top salt 1145 ft, top lime 2290 ft, making 8 mil ft gas 2555 ft, dr 2560 ft. J. G. Kugle et al's Chas. Wallis 1, lcn. Magnolia Pet. Co.'s John Sealy 1, top salt 2090 ft, top lime 2700 ft, bailed 8 bbls oil after shot 30 qts in lime 3036-44 ft, co and oil tests 25.6 gravity. R. F. Owen et al's Johnson 1, elev 2499 ft, sd 1200 ft. Sid Richardson et al's O'Brien 5, top salt 1135 ft, dr 2475 ft. Richford & Smith's Johnson 1, dr 300 ft. Shipley Oil Corp.'s Monroe 1-A, elev 2655 ft, top salt 2485 ft, ur 2520 ft. TP Coal & Oil Co.'s H. James 1, machine.

WINKLER COUNTY—Empire Gas & Fuel Co.'s Daugherty 1-C, top salt 1370 ft, top lime 2624 ft, tested hole full sulphur water 2995-3010 ft, co at 3089 ft and flowing 150 bbls oil daily plus 95 per cent water. Magnolia Pet. Co.'s Bashara 1, dr 210 ft; Scarborough 3, top salt 1225 ft, top lime 2573 ft, dr 2820 ft. L. C. Turman et al's Daugherty 1, top salt 1440 ft, top lime 2645 ft, dr 2850 ft.

ABBREVIATIONS

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CENTRAL EAST TEXAS

Completions

Company, Well and Location		Initial Production Bbls.	Depth
KAUFMAN COUNTY—			
Otto Winters & Coastline Explorations, Inc., Barrow 1, ...	*		3518
VAN ZANDT COUNTY—			
D. H. Byrd et al, C. H. Morris 1..	*		4721
L. G. Priest et al, B. Blewett 1	*		3212

ANDERSON COUNTY — Frost Oil Co.'s Botting 1, A. B. Patton sur, dk. Humble O&R Co.'s J. W. McCaffrey 1, Blackfoot block, I&GN Ry. sur, A-418, elev 465 ft, dr 1350 ft.

BOWIE COUNTY—Joe Burnham et al's G. W. Burnett 1, top Annona chalk 1430 ft, top chalk 2906 ft, dr 3030 ft. Maud Redwater Oil Co.'s Merritt 1, Y. S. McKinney sur, rig.

CAMP COUNTY—McDonald Bros.-Atlantic Oil Prod. Co. et al, B. D. Tillery 1, J. H. Murphy sur, elev 440 ft, Pecan chalk at 2410-2535 ft, dr sand 3970 ft.

CASS COUNTY—Wesley Morse et al's Henderson 1, C. C. Bailey sur, dk. Phillips Pet. Co.'s J. R. Olds 1, J. A. Stephenson sur, dr 1520 ft. John C. Rogers et al's Lanier 1, K. A. Welborn sur, elev 366 ft, top Annona chalk 2144 ft, sd with show oil in Nacatosh sand 2185 ft. The Texas Co.'s Citizens State Bank 1, Jos. Watkins sur, elev 339 ft, top Nacatosh sand 1841 ft, dr 2310 ft.

CHEROKEE COUNTY—Arkansas Fuel Oil

Co.'s N. A. Deaton 1, F. Coleman sur, elev 368 ft, top Pecan chalk 3493 ft, dr chalk 3720 ft. Berry & Hale's Jones 1, dk. D. H. Byrd et al's W. H. Felder 1, Brooks Williams sur, dr 600 ft.

DELTA COUNTY — The Delta Co. (was Geo. Kean & J. B. Evans) Mrs. Neatherly-Hays 1, J. B. Anderson sur, elev 503 ft, cem cas 2801 ft, testing 3091 ft. D. S. Hoad et al's J. J. Baker 1, T. P. Eddin sur, cem cas 221 ft. Worthington & Stedham's W. H. Dejernett 1, E. Chick sur, rig.

ELLIS COUNTY—G. C. Foster & S. C. Richardson's Moise-Cerf 1, La Pena sur, elev 440 ft, sd 2187 ft. E. M. Rogers et al's J. L. Winn 1, O. Wheeler sur, dr 1325 ft. The Triangle Corp.'s W. B. Hale 1, S. Smith sur, sd 3178 ft.

FANNIN COUNTY—Ed. V. Parsons et al's Morgan 1, J. E. English sur, elev 668 ft, showing gas, reaming to set 6⅝ cas at 3435 ft and cut off upper water.

FRANKLIN COUNTY — Harper-Byers et al's A. J. Laws 1, D. G. Rogers sur, sd 825 ft.

GREGG COUNTY—W. A. Moncrief-J. E. Farrell & Arkansas Fuel Oil Co.'s F. K. Lathrop 1, Wm. Robinson sur, rig. W. T. Daniel & Mrs. Mamie Hammonds' Hamby 1, John Lout sur, elev 376 ft, top Pecan chalk 2361 ft, dr 2600 ft.

HENDERSON COUNTY—H. B. Ashburn et al's T. E. Terry 1, Arron York sur, elev 397 ft, top Pecan chalk 2810 or 2840 ft, dr 3230 ft. Texas-State Oil Co.-R. H. Dearing & Sons et al's T. H. Skinner (20-ac) 1, J. Hinshaw sur, elev 453 ft, Pecan chalk 2500-2603 ft, top broken Austin chalk 3559 ft, top hard chalk 3570 ft, dr 3620 ft.

NAVARRO COUNTY—L. G. Priest et al's H. Albritton 1, H&TC Ry. sur, dr 1736 ft.

RED RIVER COUNTY—E. L. Chapman et al's Morris-Guest 1, S. Larkin sur, sd 1505 ft. Johnson Pet. Co.'s Style 1, Dean sur, sd 2124 ft. Buffington et al's L. H. Moore (100-ac) 1, D. Cornelius sur, rig. Lloyd Oil Corp.'s H. H. Mace 1, Wm. Cullum sur, sp and sd.

RUSK COUNTY—J. Alford et al's W. L. Wallas-Trash 1, R. H. Pinney sur, dk. Dan Auld et al (was Peyton Bros.) W. H. Worrell (38-ac) 1, Juan Ximinez sur, elev 412 ft, Pecan chalk 2490-2510 ft, top Austin chalk 3439 ft, cem 6⅝ cas at 3540 ft, td 3600 ft. P. A. Bailey et al's Thrash 1, F. Cordova sur, sd 201 ft. Ed. W. Bateman et al's L. D. Crim 1, E. Sevier sur, elev 440 ft, dr 1140 ft. Dan Dillon et al's W. H. Frederick (75-ac) 1, Isaac Parker sur, dk. E. L. Evans & E. L. Chapman's A. P. Finney (20-ac) 1, Isaac Parker sur A-623, dk. Frank P. Files (O'Mara & Meredith's) Robertson (14-ac) 1, R. H. Pinney sur, dk. Frank Foster & Deep Rock Oil Co.'s C. D. Ashby (60-ac) 1, Juan Ximinez sur, elev 429 ft, top hard chalk 2315 ft, dr hard chalk 2687 ft. H. L. Hunt et al's Daisy Bradford (17-ac)) 1, Juan Ximinez sur, elev 391 ft, top Pecan chalk 2232 ft and first hard chalk 2500 ft, dr 2655 ft. Kimbrough & Miller (now An-Lloyd et al's Camp (5-ac) 1, Juan Ximinez sur, elev 396 ft, dr 1510 ft. Geo. D. "Tex" Lloyd et al's Camp (5-ac) 1, Juan XiXminez sur, elev 408 ft, dr 1095 ft. J. K. Lewis & Abe Goodman's Oscar Jones (29-ac) 1, W. Brown sur, A-95, dk. A. A. Malone et al's W. M. Camp (4-ac) 1, Juan Ximinez sur, lcn. C. Rosenfield et al's E. L. Pinkston 1, M. V. Pena sur, elev 363 ft, sd 2015 ft. Lauren L. Smith et al's W. H. Worrell 1, Juan Ximinez sur, elev 424 ft, top broken Pecan chalk 2338 ft, and hard chalk 2553-2925 ft, dr 3400 ft. C. C. Stone et al's McCullough 1 and 2, lcns, Juan Ximinez sur. Stroube & Stroube's W. H. Frederick 1, Juan Ximinez sur, elev 415 ft, dr 2485 ft. Wainwright-West Oils, Ltd.'s, Geo. Moore (7½-ac) 1, Juan Ximinez sur, materials.

SMITH COUNTY—Owen-Sloan Oil Co. & R. H. Davis' J. H. Starnes 1, J. W. Allen sur, elev 417 ft, Pecan chalk 2738-3052 ft, fsh 3370 ft. T. B. Slick & J. G. Kugle's M. Freeman 1, A. J. Lagrone sur, elev 498 ft, top Pecan chalk 2955 ft, sd 3509 ft. Sun Oil Co.'s Oscar McGehee 1, Thomas Quevedo sur, elev 428 ft, coring 2073 ft. Thayer & Rogers' Dr. Willingham 1, Jacob Herrin sur, dr 1820 ft.

TITUS COUNTY—Deep Rock Oil Co. et al's Ed. L. McElroy 1, Kendall Lewis sur, dr 710 ft.

UPSHUR COUNTY — McGinley Corp.'s Reeves-Truitt (47-ac) 1, L. B. Brown sur, rotary rig.

VAN ZANDT COUNTY—Bethel Oil Co.'s P. Smith 1, M. Neal sur, elev 435 ft, sd 4603 ft. J. C. Fore et al's P. Smith Hand 1, Wm. Sherman sur, spd and sd. Hartt Pet. Co.'s M. L. Cox 1, A. C. Nugent sur, sp and sd. T. W. Moore et al (was Ward Powell's) W. A. Kellam (52-ac) 1, Jessie Russell sur, elev 515 ft, top Navarro 1755 ft, top Pecan chalk 2782 ft, top Wolfe City 2854 ft, dr 3900 ft. Van Oil Assn.'s Tankersley 1, L. Landers sur, lcn.

VAN FIELD—Cranfill & Germany, Inc.'s, L. L. Swain (4½-ac strip) 1, sp and sd. Hartt Pet. Co.'s Swain (2.3-ac strip) 1, spd and sd. Helms et al's C. E. Bogue 1, Marshall University sur, elev 461 ft, sd 2210 ft. Humble O&R Co.'s R. S. Blake 5 and 6 rigs; A. J. Fowler 1, rig; Sanger Bros. 2, lcn. Imperator Oil Corp. & Paul Vitek's G. J. Luther (3.01-ac strip) 1, elev 447 ft, top Pecan chalk 1653 ft, Austin chalk 2630-2810 ft, sd after testing water in Woodbine, td 3025 ft. Roy Jenkins et al's M. E. Davis 1, sd after showing for small pumper, td 3031 ft. Kraft & Kelsey's Wylie Enas (30.6-ac strip) 1, J. Prado sur, Pecan chalk 1645-1770 ft, Austin chalk 2550-2797 ft, tested salt water and some oil and gas in Woodbine 2962-79 ft and sd. Pure Oil Co.'s Sam Allen 1, dr 2380 ft; R. E. Cade 1, cem cas 2664 ft, td 2668 ft; A. D. Clark (2-ac) 1, dr 1090 ft; A. D. Clark (42-ac) 1, top Austin chalk 2460 ft, dr 2760 ft; Clark 2, rig; N. E. Clark (89-ac) 4, rig; V. T. Davis 1, dk; Mertie Elliott 1, swabbing and testing but wont flow, td 2933 ft; A. W. Ellison 2, cem cas 309 ft; H. C. Gilbert 1, cem cas 307 ft; Mary P. Neills 2, dr 1485 ft; Fletcher B. Smith 2, rig; L. A. Smith (40-ac) 1, dr 2150 ft; G. C. Stewart (50-ac) 2, top Austin chalk 2325 ft, cem cas 2669 ft; O. L. Swain (80-ac) 2, dr chalk 1710 ft; W. F. Swain (40-ac) 2, no oil and shut in as small gasser, td 2924 ft; Swain 3, dr 2527 ft; J. T. Taylor 2, dr 380 ft; A. G. Tunnell (50-ac) 1, top Austin chalk 2545 ft, missed pay, dr sandy-shale 3226 ft; E. B. Tunnell (4.23-ac) 3, top Austin chalk 2335 ft, cem cas 2593 ft; I. W. Thompson 1, top chalk 2785 ft, missed pay, coring 3138 ft; R. L. Wells 5, dk. Sun Oil Co.'s I. W. Thompson 3, dk. The Texas Co.'s R. A. Tunnell (100-ac) 2, cem cas 2800 ft; Tunnell 3, top Austin chalk 2400 ft, cem cas 2721 ft; Tunnell 4, rig. Ventex Oil Co.'s L. A. Smith (2-ac strip) 1, dk.

WOOD COUNTY—Wood County Dev. Co.'s Ricks 1, Daniel Fuller sur, sd 1000 ft.

Coyote Hills, California, where the oil flows from the hills by gravity to the tank farm shown in the center.

SOUTH TEXAS

BASTROP COUNTY—Champion Bros.'s H. B. Smith 1, 1 mi w of Elgin, td 2370 ft, dr in Georgetown, csg set 1900 ft on top of cavity in chalk, showed oil to 1941 ft, being dr to Edwards lime. Chas. Long's McWilliams 1, Geo. T. Glasscock sur, td 1000 ft, dr. Pacific O&G Co.'s Litton 1, td 800 ft, dr. Texas Pet. Products Co.'s Tregg 1, Stewart sur, td 1680 ft, dr.

BEE COUNTY—Cosden Oil Co.'s Stoltfus 1, td 4390 ft, set 6⅝-in cas at 4352 ft, showed 1,000,000 cu ft gas, 260 lbs pressure, dr deeper. Humble's McKinney 8, td 4190 ft, coring. Hulburt et al's Chestnut 1, 12 mi from Skidmore, td 4314 ft, sd to repair boiler. Humble & Hulburt et al's Wood 1, td 5078 ft, cleared hole, swabbed 3300 ft, no result; slight oil and gas show. Houston Oil Co.'s Pettus Town 2, td 4100 ft closed down. R. Hahn et al's Copeland 1. B. Q. Hadley sur, 196, td 3575 ft, sd for orders. Independent O&G Co. & Moody Seagraves Prod. Co.'s Quincy 1, A. J. Moyah sur, td 5220 ft, dr; Welder 1, sp in. J. S. Mauldin's Mauldin 1, G. A. Kerr sur, td 3680 ft, dr. Ed Price's Weiss 2, td 4424 ft, top of pay 4411 ft; Weiss 3, lcn; Weiss 1, td 4422 ft, testing. Raullins et al's Campbell 1, B & B sur, 129, td 3005 ft, dr. Rowan & Hope's Goree 1, Thomas Barton sur, dk, waiting on rig. Simms Oil Co.'s Holzmark 2, James A. York sur 333, lcn. Texas Co.'s S. R. Bridges 1, T. Duty sur, permit granted. Union Prod. Co.'s Ray 22, lcn; td 3932 ft, sand 3916 ft, set 6⅝-in pipe at 3915 ft, initial prod 925 bbls on 5⅛-in choke; Ray 25, td 1100 ft, dr at last report. Wilson & Hill's Townsite 14, lcn; Townsite 16, center of blk 16 in Pettus Townsite pool, dk.

BEXAR COUNTY—R. H. Eckert's P. Dobrowolski 10, sp in. Eckert & Son's John Brehm 3, td about 680 ft, csg set. Gatlin Oil Co.'s Mrs. Anna Beck 2, J. Perez sur, 57, td 700 ft, pumping about 25 bbls; Beck 3, J. Perez sur 57, lcn. Morrosos & Collins' Hamberdale 5, Dobrowolski field, td about 690 ft, being completed. Wm. M. Morgan's Masterson 3, td 810 ft, showing large amount of oil, to be drilled into sand before completing. Penn Oil Co.'s Kosub 1, J. W. Ralls sur, 11, td 1056 ft, dr, oil smell reported in core taken at 1036-54 ft. J. Morgan Russell's Price Story 1, A. Navarro sur, td 483 ft, cored sand at 481-83 ft that showed some oil and strong odor of gas. Russell & Moore's Mills 2, Angel Navarro sur, td

1040 ft, dr. Swearingen Bros.'s Halvadier 3, J. Perez sur, 59, sp in. Swearingen Oil Co.'s Fee 8, to mv on. Weibacher & Associates' Ernst 1, J. Christopher sur, td 710 ft, set csg about 700 ft, show considerable high gravity oil, completing, no later report.

BLANCO COUNTY—Anderson & Manning's Speer 1, John W. Speer sur, moving on rig. Adams & Lysles' Leeders 1, James Standford sur 29, td 690 ft, dr. Meeks et al's E. W. Walker 1, td 980 ft, sd. C. L. McCreary's Kiers 1, Scherling subdivision, td 670 ft, sd to re-dr. Forest Oil Co.'s Rosenfield et al Hohenberger 1, td 460 ft, sd. Hardy Sitton's McMillen 1, 2 mi w of Blanco city, td 580 ft, dr.

BROOKS COUNTY—Ed East's Miller & Albricht, Braulia G. De Garcia 2, La Mastena & Gonzalene tract, td 400 ft, set 6⅝-in csg, temp closed down; B. Garcia 3, Mastena Y Gonzalene Grant lcn. Southern Crude Oil Purchasing Co.'s Holbein-Wormser 1, El Palo Blanco de Maguellas grant, td 4582 ft, dr in shale and lime.

CALDWELL COUNTY — Anderson et al's S. J. Barber 1, Squire Damon sur, td 2245 ft, set csg top of serpentine 1840 ft, prod 40 bbls oil; Vickery 1, Damon sur, ru. Gargill et al's Thomas 1, J. Roberts sur, prep to sp in. J. E. Mills et al's McMahon 1, Pinchback sur, td 1200 ft, dr.

COMAL COUNTY—Caldwell & Lanier's T. J. Byler 1, HE and WT 5894 sur, td about 520 ft, coring.

DE WITT COUNTY—Gibson et al's William Van Roeder 1, William Dill sur, td 1550 ft, dr. Sheldon Pet. Co.'s Goehring 1, H. Stubblefield sur, lcn. Penn Oil Co.'s Junkers 1, John F. Pettus sur, td 3332 ft, dst 3328-32, showed 3300 ft salt water.

DUVAL COUNTY — Cooperative Drilling Co.'s John Dinn 4, Kohler area, td 1200 ft, dr. Frasher & Schoolfield's Bishop Duval Land Co. 1, td 1850 ft, dr, sand at 1590 ft, tested water. Humble's Koehler 50, sur 164, ready to sp in. Mag Pet Co.'s Edge-Hahl 1, sur 64, td 3837 ft, dr; Benavides 3-A, O'Hern & Seacord sur 174, td 2848 ft, tested for large gasser, 4¾-in csg set 2841 ft on top of sand, drill out plugs. Sloan et al's Luby 1, sw corner of sur 693, lcn aband. SRC Co.'s Duval County Ranch Company 2, sur 293, td 1900 ft, fsh, pulled in dk. Vacuum Oil Co.'s Duval County Ranch Company 1, sur 280, dk.

EDWARDS COUNTY — James Dalgish et al's Sid Peterson 3, Warner Ranch, td 4558 ft, dr in hard lime. Phillips Pet. Co.'s Holman 2, sur 25, td about 6300 ft, dr.

FRIO COUNTY—Wray & Dunbar's Barnes 1, sec 123, td 2385 ft, re-dr csg set 2311 ft, gas show developed 1000 pressure at 2311-68 ft. United North & South Dev. Co.'s Little 1, J. J. and Sallie Little Ranch, td 3892 ft, dr in Edwards.

GOLIAD COUNTY—Gibson Oil Co.'s C. B. Parks 1, Dan O'Driscol sur, td 4419 ft, dst 4414-19 ft showed 76 lbs gas pressure, some salt water; dr deeper. Remenschneider et al's A. T. Fromme 1, Simpson block, td 2302 ft, standing. T. B. Slick et al's Potter 1, Obed Marshall sur, td 700 ft, dr. Union Prod Co.'s Ray 27, Jabian Gomez sur, lcn; Ray 28, 2 mi due e of line of Union Ray 3, lcn; Ray 29, td 4200 ft, dr.

GONZALES COUNTY — Antibus & Cummings' Miller 1, Ann Williams sur, td about 1900 ft, cored oil sand. Geo Lawrence et al's Pettit 1, 122 ft dk erected to mv on rig immediately for 2500 ft test. Lenden Pet. Co.'s Hensley 1, td 4811 ft, failing, oil water and gas. United North & South Dev. Co.'s Wells 1, James Johnson 1-3 league, td 2323 ft, dr in sandy shale.

GUADALUPE COUNTY—Adams & Lysles' Seligman 1, John King sur, td abt 2040 ft, top of chalk 1939 ft, dr. Calhoun & Miller's Linebarger 1, td 1278 ft, temp abnd. Gulf Prod. Co.'s Posey-Baker 9, td 2603 ft, top of pay 2584 ft, prod, 1072 bbls on pump Tadlock 5, 300 ft s of No. 3 and 150 ft from w line, ru. Humble's Denman 19-A, td 2395 ft, dr; Sallie Wilson 7, td 2623 ft, prod 175 bbls; Denman 20-A, td 2210 ft, dr; Sue Denman 1-B, Jacob Darst sur, dk; D. D. Baker 9, td 2540 ft, casing set at 2528 ft, being completed. Louisiana Oil Refining Co.'s Thomas Dix 8, td 2560 ft, pump 2000 bbls, set 6⅝-in casing at 2509 ft; Thomas Dix 9, td 2575 ft, prod. 2500 bbls casing set 2509 ft. Magnolia Petroleum Co.'s Rand Miller 5, td 2654 ft, casing set at 2622 ft, rigging up pump; Thomas Dix 13, td 2570 ft, set 6 3-8 in casing, waiting on cement; Thomas Dix 14, td 1925, drill stem stuck; Klein 4, td 2450 ft, dr; Rand Miller 6, td 2422 ft, dr; Annie Knodel 4, td 2545 ft, set 6⅝-in casing at 2534 ft, being completed. Suttle et al's Baenzinger 2, A. O. Masola sur, td 1957 ft, casing set at 1763 ft on top of Austin chalk, bailed several bbls of oil and showed considerable gas—no further information. The Texas Co.'s Lemmie Anderson 6, dk; Knoblock 6-A, new location—oil location dropped; Knoblock 7-A, new location—old location dropped; P. Roamel 4, R. C. Appline 1, J. B. Alexander sur, ru. H. M. Wurzbach's Fee 1, Y. Shelton sur, td 400 ft dr.

JIM HOGG COUNTY—Cole Pet. Co.'s W. P. Allen 1, sur 23, td 1100 ft, dr. H. W. Pippin's Hinnant 1, sur 147, dk. J. D. Pulliam Jr.'s Jones 1, Diego Hinojosa Grant, td 1602 ft, standing. E. E. Watts Agent's Gomez 1, sur 125, td 2000 ft, tested dry, plugged back to 1103 ft, set csg at 1070 ft, to test gas sand at 1070-1103 ft. Wilson's Edds 1, sur 210, ru.

KARNES COUNTY—Clayton, Lightfoot et al's Barnett 1, Alex Hunter sur, td 2944 ft, closed down. Fort Bend Oil Co.'s Newberry 1, Carlos Martinez sur, td 2976 ft, set 6⅝-in csg at 2958 ft, swabbing, no show. J. Morrissey's Ragsdale 1, td 1998 ft, sd.

KENDALL COUNTY—Borget et al's Willie Haag 1, td 1320 ft, dr. R. M. Perkins' Lawhorn 1, td 710 ft, fsh for tools. Permian Oil Co.'s Boles 1, 5 mi ne Boerne, td 1150 ft, dr. Hardy Sitton's W. B. Garvin 1, near Kendalia, td 925 ft, dr. P. B. Sterling's McCrocklin 1, C. B. Owen sur, td 1600 ft, dr.

KERR COUNTY—L. L. Evans, Walter Gant et al's Mashe & Turnstill, Jeff Love 1, td 2563 ft, sand from 2544-47 ft yielded 2 bbls of light green oil testing 39.6 gravity at temperature of 70 degrees. Deepened to 2563 ft in black shale, but no increase was obtained, well shot, now being cleared.

KINNEY COUNTY—Mag Pet Co.'s Wardlow 1, Blaez sur, td below 3500 ft, dr.

KLEBERG COUNTY—Bowen & Sarles' R. H. Simmons 1, A. Houston sur, td about 1650 ft, dr.

LA SALLE COUNTY — Fred W. Volvz, Coleman 1, sur 514, set 40 ft 10-in csg, waiting on cement.

LEE COUNTY—Burt et al's R. C. Saunders 1, td 3125 ft, sd. Marts & Beavens' Thomas 1, td 1690 ft, dr.

LIVE OAK COUNTY — Houston Oil Co.'s Dunning 3, lcn cleared; Snyder 1, td 3290 ft, dr; Cartwright 22, td 5424 ft. washing down cement after dr plugs, well is gassing very heavily; Boothe 1-A, td 5220 ft, coring for sand. Jacobs, Buzzino & Pickett's Key 1, td 700 ft, sd. Sid Keoughan's C. E. Terrell 1, td 2500 ft, dr. Markley et al's Reeves Brown 1, J. E. King sur, ru. Tul-Tex Oil Co.'s L. Jacobs Estate 1, td 1800 ft, dr.

McMULLEN COUNTY — Brodie Shearer and Emrich's Shiner 1, H. Brewer sur, spudded and standing. Mogul Pet. Co.'s Martin 1, E. Meloy sur, td 28 ft. set 10-in csg, now standing. Whall et al's Shiner 1, H. M. Brewer sur, permit granted.

MAVERICK COUNTY—Rycade Oil Co.'s Sullivan 5, td 7092 ft, fsh; Chittim 6, td 3640 ft, re-dr.

MEDINA COUNTY—Calco Pet Co.'s Crawford 1, td 2630 ft, dr, Georgetown topped at 2596 ft. J. O. Dore's R. J. Taylor 1, permit granted. National Oil Co.'s Howard 1, John George sur, td 1645 ft, standing.

MILAM COUNTY—Lloyd Oil Corp. & H. W. Elliett's J. W. Davis 1, td 1300 ft, dr in Eagle ford, had showing of oil at 1100 ft in bottom of Austin chalk. Texas Co.'s F. W. Moore 1, Acosta sur, permit granted.

NUECES COUNTY — Callahan O&G Co.'s Allen 2, Garcia sur, td 1517 ft, dr no later rept. Houston Oil Co.'s Comstock 1, td 2450 ft, dr; Hunter 1, 600 ft from w line and 165 ft from s line of 75-acre tract in sec 591, lcn. Moody-Seagraves Prod. Co.'s Smith 1, J. Dunn sur, td 480 ft, set 12½-in csg to re-dr. Saxet G&O Co.'s Pearson et al, Donnigan 2, td 5990 ft, dr; Dunn 7, dk. South Tex Prod Co.'s Walters 3, Agua Dulce field, td 1984 ft, csg set, waiting on cement, Ollie Purl 2, td 1786 ft, csg set on top of gas sand, prep to dr in. H. W. Weinert's Moble 1, td 660 ft, dr.

REAL COUNTY—McGinley & Gigler's Habley 1, td 700 ft, dr.

SAN PATRICIO COUNTY — Cosden Oil Co.'s Powell 1, td 4350 ft, dr; Ramsey 1, td 2000 ft, ru. Jacobs, Buzzini and Pickett, J. C. & Bobby Baldwin 1, td 4020 ft, sd to mv on heavier rig. J. L. Kenedy's Lollie McRae 1, td 2152 ft, sd. Peterman Oil Co.'s O. K. Crow 1, Geo. H. Paul Sub, td abt 4100 ft, sd; Foster 1, 3½ mi w of Sinton, lcn to be dropped. Saxet Oil Co.'s Carroll 1, dk up; Raschall 17, down 4887 ft in sand, set csg to bring in well. Union Prod. Co.'s Webster 4, td about 6000 ft, tearing down.

STARR COUNTY—J. L. Smith's Welsh 1, Pedernal Grant, td 1192 ft, closed down. Los Olmos Oil Co.'s Kelsey-Bass 1, td 377 ft, set 8-in csg at 371 ft, prod 4,000,000 cu ft of gas with 90 lbs rock pressure. The Texas Co.'s V. G. Guerra 5-A, td 3670 ft, tested 7 joints oil and mud with considerable gas pressure to set csg at 3541 ft on top of sand.

UVALDE COUNTY — Phantom Oil Co.'s Claudt 1, sur 611, td about 2800 ft, dr. Waldrop & Welsh's Edmonds 1, A. Gomez sur, td about 1200 ft, standing.

VAL VERDE COUNTY—Independent Operator's Whitehead 1, td 5430 ft, set csg. Phantom Oil Co.'s Ingram 1, td 3035 ft, sd.

VICTORIA COUNTY—Houston Oil Co.'s McFadden 1, C. L. Mann sur, no report. Lion O&R Co.'s McFadden 2, td 6448 ft, fsh for dr stem. The Texas Co.'s McFadden 1, td 5745 ft, dr.

WEBB COUNTY—Alamo Dr. and Leasing Co.'s S. Benavides 2, sur 964, td 2300 ft, coring. Usher Carson et al's Benavides 3, sur 1613, lcn. O. W. Killam's Killam 1, Villegas sur 1248, td 2810 ft, dr; Bruni 1, td 3022 ft, set 5 3/16-in csg at 3012 ft, on top of sand, testing; Garcia 1, td 1885 ft, dr, set 6⅝-in csg at 1848 ft, sand at 1848, 1860 ft, tested gas and water. Mag Pet. Co.'s Sue Jones 1, sur 647, td 5001 ft, closed down. Geo. S. Marshall's C. W. Webster 3, td 2110 ft, dr.

WILLIAMSON COUNTY—Anderson et al's Lawrence 3, td about 2000 ft, set csg at 1501 ft, prod 3000 bbls; Lawrence 8, s offset to No. 1, ru; No. 6-A T. P. Simmons td 1890 ft, prod 250 bbls; S. J. Smith 1, td 2575 ft, closed down. Bartlett and Wilson's R. E. Steward 2, no report. E. L. Chapman's Abbott 4-D, prod 300 bbls; J. C. Abbott 6-D spudded; T. P. Simmons 1-B, spudded. E. E. Ertel et al's J. C. Abbott 7, td 700 ft, dr; J. C. Abbott 8, dk. Elliott et al's A. J. Carlson 1, td 1100 ft, dr. Hrska Bros.' Guentzel 1, e of Chapman field, td 2275 ft, dr in, csg set 2144 ft. E. R. Marts et al's T. P. Simmons 5, swabbing, estimated at 400 bbls on pump. Martin et al's S. Jarrall 1, td 40 ft, sd. Tom Patton's J. C. Abbott 1, td 1865 ft, prod 200 bbls. A. M. Keisker's E. L. Chapman 1, dk. Texas Gas Fuel Dev. Co.'s Gernett & Allison 1, 9 mi ne of Taylor, td 40 ft, sd. Sarsfield & Wilson's J. A. Walker 1, 8½ mi ne of Elgin, td 700 ft, sd; C. Sitman 1, near Coupland, td 3000 ft, to mv on and re-dr. G. Stratton's J. C. Abbott 5, td 1834 ft, prod 150 bbls. Williamson County Pet. Co.'s Kilgore 1, G. Miller sur, permit granted; Kilgore 8, S. Miller sur, permit granted.

WILSON COUNTY — Rycade Oil Co.'s Johnson 1, J. M. Balmeseda sur, mv on.

ZAPATA COUNTY — Allied O&G Co.'s Guitierrez 12, td 100 ft, standing. Blair and Sons' E. Guitierrez 1, below 1750 ft standing. O. W. Killam's Lopez 1, sur 251, td 1636 ft, dr. Lincoln O&G Co.'s Gutierrez 1, td 1150 ft standing. Mackenzie & Tallmadge's G. F. Trevino 1, td 150 ft, dr. Moore & Moore's Adela G. De Flores 1, td 2000 ft standing at 1573 ft, reported tested dry; td 50 ft, standing. Nordan & Morris & Grimm & Yakey's S. Bustamente, dk. Natl Oil Co of Texas' Luther et al 2, Borrego Grant, td 1740 ft closed down; Luther et al 1, Da Pron subsivision, ru. B. F. Nixon's A. Guitierrez 1, td 37 ft, set 10-in csg, to re-dr. John H. O'Hern's S. Benavides 1, td 1041 ft, dr. John Pappas Pool, Inc.'s Flores 1, prep to sp in. Penny Prod Co.'s Juan V. Cuellar Jr et al 1, td 1725 ft, sand at 1655 ft, but failed to get a test. Pal-Mar Oil Co.'s Jose Bustamente et al 1, sp in Nov. 5, 1930. W. R. Shankle's M. Trevino 15, sur 65, td 1258 ft, set 6⅝-in csg at 1242 ft, prod 100 bbls; Guittierrez 6, dk; Guitterrez 7, lcn. SR & C Oil Corp.'s F. Cuellar 1, blk 16, sur 62, lcn; Cuellar 12-B, td 1249 ft, set 6⅝-in cas at 1222 ft, prod 50 bbls; F. Cuellar 1, lcn; F. Cuellar 2, lcn; Montemayor D-2, sur 64, sp in Nov. 5, 1930. South Texas Prod. Co.'s F. Guitterrez 1, td 150 ft, dr. Wicker, Arnold & Ahler's M. Garza 3, Muckleroy pool, dk. J.

W. Winch's Alejandro Bustamente 1, td 1251 ft, set 6⅝-in csg in 1216 ft, sand at 1216-32 ft, cap 1233-35 ft, another sand 1236-51 ft, 600 ft oil setting line. T. H. Ward's Guadalupe Urbide 1, ru. O. W. Killam's Cuellar 32-B, sur 277, dk; Cuellar 33-B, 1330 ft e of w corner and 150 ft from s line, sur 277, sp in Nov. 3, 1930.

ZAVALLA COUNTY — Ed Anglin's Matthews 1, td 950 ft csg set, waiting on cement; Pryor 5, td 1050 ft, dr. Texas Gas Utilities Co.'s Pryor 2, td abt 1300 ft, dr. F. W. Weigand's Gates 1, sur 13, td about 3100 ft, dr.

EAST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
MARION COUNTY—		
W. D. Chew, Fee 1, Wm. Hamilton sur	*	3426

CASS COUNTY — Wesley Morse et al's Henderson 1, C. C. Bailey sur, dk. Texas Co.'s Citizens State Bank 1, Jos. Watkins sur, sp set 10-inch cas 158 ft, top Nacatosh 1841 ft, dr hd sand 1953 ft. Jno. C. Rodgers' Lanier 1, K. A. Welborne sur, claim oil show, sd 2180 ft. Phillips Pet. Co.'s J. R. Olds 1, dr 920 ft.

HARRISON COUNTY — Shell Rock Pet. Co.'s Daugherty 1, Burris sur, arr deepen, td 3520 ft.

MARION COUNTY—W. D. Chew's Fee 1, Wm. Hamilton sur, 6-inch cas 2270 ft, plugged back to 1610 ft perf. cas, sw abn old td 3426 ft. Trammell et al's Hussey 1, Chas. Lockhart sur, elev 282 ft, top chalk 1774 ft, claim oil show, r to set 8-inch cas hd chalk last 2 ft, td 1884 ft.

PANOLA COUNTY—Knott et al's Marion Durham 1, Chas. Haley sur, claim oil show in lime, set 6⅝ cas 2670 ft, td 2732 ft. Smith et al's Hunt 1, Albert Johnston sur, dk. Bell et al's Burnett Lbr. Co. 1, S. B. Hendrick sur, cored sandy shale, show oil, no gas 2097 ft, dr 2200 ft. Ark. La. P. L. Co.'s Brumble A-2, B. C. Jordan sur, dr 4008 ft. Creighton & Hart's Kyle 1, J. Tippett sur, top chalk 1444 ft, top Blossom 2216 ft, cor shale 3004 ft. Warren & Dawes' McNeese 1, A. Booker sur, dk. rig up. Texas La. Prod. Co.'s Baker 1, B. C. Jordan sur, sp set 12½-inch cas 367 ft. Natural Gas Prod. Co.'s H. H. Alvord 1, B. C. Jordan W. G. Banks' Baldwin 1, Hampton West sur, sur, rig up.

SABINE COUNTY—Loring Oil Co.'s Nona Mills Lbr. Co. 1, Jas. Mason sur, tested 1 mil gas, ds set 9-inch OD cas 4150 ft (corrected depth), td 4200 ft.

SHELBY COUNTY—C. R. Ridgeway's Parker 1, Jesse McKelvey sur, set 9-inch cas 1831 ft, sr 2506 ft. Chapparal Oil Co.'s Holt 2, Matthew Moore sur, sd 3300 ft.

TEXAS GULF COAST

AUSTIN COUNTY—O'Hara et al's Schrader 1, sd 1795 ft. Empire's Kunze 1, San Felipe, dr 4650 ft shale. Humble's Duncan State Land 2, e edge Raccoon Bend, set cas at 3125 ft. R. Hardy B-3, e edge Raccoon Bend, dk.

BRAZORIA COUNTY—Thos. Faust et al's Fee 6, 2 mi s Nash Dome, dr 5540 ft water sand. Steel & Strickland's Lochridge 1, near Lochridge, sd 50 ft. Rycade's Wildom 1, Nash Dome, pulling dr stem 5660 ft td. Rycade & Amerada's Seaburn 2, Stratton Ridge, dr 3400 ft shale. Freeport Sulphur Co.'s Fee 2001, Ryan Mound, dr 3000 ft in second hole. The Texas Co.'s Ewing 1, Manvel, dr 7430 ft shale; J. H. Murdock 1, Fresno, dr 5225 ft shale. Mills Bennett's Allen 2, Allen Dome, dr 5160 ft shale; Randon 2, Allen Dome, lcn; Reese 2 dr 1220 ft sand rock. United Oil Syndicate's Speer 1, 3 mi n Danbury, dr 50 ft.

CALHOUN COUNTY — The Texas Co.'s Thomas 1, Chocolate Creek, J. P. Tilley sur, fsh for stuck dr stem at 5955 ft.

CHAMBERS COUNTY—Pure's Lost Lake 5, set cas at 5105 ft; Mayes 12, Lost Lake, set cas at 975 ft. Shell's Herff 2, Moss Bluff, dr 5550 ft sandy lime. Chicago Oil Corp.'s Lawrence 1, 10 mi s Barbers Hill, dr 4080 ft sandy shale.

GALVESTON COUNTY—Gulf's Smith 10, High Island, dr 5650 ft hard sand.

GRIMES COUNTY—Wainwright-West Oils, Ltd's Templeman 1, 6 mi s Navasota, cleaning out to dr deeper to 4500 ft, present depth 3503 ft. R. H. Byrd-Dearing et al's Uuenker 1, ½ mi n Anderson, dr 3290 ft. Cullen & West's Bookman 1, 1 mi s Plantersville, dr 1010 ft gbo.

HARDIN COUNTY—D. O. Speight's Gidrey 1, 4 mi s Batson, stdg 2850 ft.

HARRIS COUNTY—Humble's Simms-Smith 78, Goose Creek, td 4990 ft, pulling casing; Warren 8, Hockley, dr 5555 ft shale; Minnetex 4, Mykawa, dr 75 ft clay. W. C. Turnbow et al's Miller 1, 3 mi e Deer Park, dr 2720 ft water sand. Mrs. J. C. Baldwin's Kittman 1, 2 mi n Cypress, sd 4250 ft. Gulf States Oil Co.'s Augspurger 1, 8 mi n Houston, dr 2685 ft gbo. Golden Star Pet. Co.'s McDade 1, 1 mi n Dyersdale, dr 5100 ft sandy shale.

JACKSON COUNTY — Jackson Co. Oil Synd.'s Drushell 8, Edna, set cas at 3870 ft; Lee 2, wo, Edna Gas Field, dr 3935 ft shale and lime; Warner-Quinlan's Hungerford 1, Henry Smith sur, lcn.

JEFFERSON COUNTY — Westbury Oil Co.'s West 1, s Choate sur, sd 4100 ft. The Texas Co.'s Pipkin 4, Big Hill, dr 2960 ft sand rock. Humble's McFadden 1, 8½ mi e Big Hill, dr 250 ft.

LIBERTY COUNTY—Saxet Oil Co.'s Davis 2, n Dayton, dr 4630 ft gbo and lime. Harrison Oil Co.'s Quintette 4, dr 4610 ft hard sand. Harrison-Abercrombie's Jones 1, dr 4625 ft sand, oil odor. Gulf's Ezzell 1, Hankamer, dr 5400 ft sandy lime. Yount-Lee's Moores Bluff 3, Esperson, dr 7705 ft shale. Humble's Breeden 1, Moss Bluff, dr 5915 ft shale, lime; Hylton 1, Moss Bluff, set cas at 6350 ft; Sergent 1, Moss Bluff, dr 5385 ft sandy lime. Rycade's Heiskell 1, Jos. Dugat sur, abn at 5925 ft in hard sand.

MATAGORDA COUNTY—Empire's Baker 1, Citrus Grove, dr 5975 ft sandy lime. Cockburn Oil Corp.'s Hawkins 2, Shepherds Mott, north dome, dr 4500 ft shale.

MONTGOMERY COUNTY—Price & Wilhite's Juergus 2, 3 mi n Conroe, sd 2950 ft. Lake Creek Oil Co.'s Hunt 1, Conroe, set cas 1350 ft.

ORANGE COUNTY—The Texas Co.'s Stark 2, Port Neches, dr 6036 ft sand and shale. Gulf's W. H. Stark 1, Port Neches, dr 6975 ft sand.

WALKER COUNTY—Joyce Richardson et al's Smither 1, 12 mi n Huntsville, sd 3450 ft.

WASHINGTON COUNTY—Clifton et al's Pruiss 1, 3 mi w Brenham, sd 1625 ft shale.

WHARTON COUNTY—C. S. Thomas' Taylor 1, Boling, temp abn 1585 ft; Volney 1, Boling, dr 505 ft. Givan et al's Hudgins 1, dr 585 ft gbo.

SOUTH LOUISIANA

ACADA PARISH — Yount-Lee's Houssiere-Latrielle 9, Evangeline, dr 8220 ft shale.

ASCENSION PARISH—Gulf's United Lds. Co. 7, Sorrento, dr 1880 ft cap rk.

ASSUMPTION PARISH—Poor Boys Drlg. Co.'s LaBarre Est. 1, 47-12s-13e, stdg 2425 ft. Texas Gulf Sulphur Co.'s Landry 1, Napoleonville, abn at 1725 ft.

AVOYELLES PARISH — R. A. Tippett's Chatalin 1, 5-1n-3e, sd 3400 ft. M. L. Vincent's Morrow 1, 14-2s-4e, dr 4225 ft shale and lime.

CALCASIEU PARISH — Wilfred Lahay's Jardell 1, 25-10s-12w, dk. J. O. Davis' Ind. Co. 1, Starks, dr 6185 ft sandy shale. Vacuum's Waite 1, Iowa dome, lcn in se se sec 12-9s-7w. Yount-Lee's Miller 1, w edge Lockport, dr 6600 ft shale and sand. Union Sulphur Co.'s Martha Moss 1, Lockhart, tested salt water at 6725 ft. Dr. Thomas et al's Hewitt 1, lcn. Crawford Doyle's Johnson 1, nw flank Starks, sd 300 ft.

CAMERON PARISH—Pure's Yount-Lee 10, Sweet Lake, dk. Shell's Watkins 16, Black Bayou, lcn; Black Bayou State 2, Black Bayou, lcn. Freeport Sulphur Co.'s Yount-Lee 4, Black Bayou, r at 1275 ft; Yount-Lee 5, Black Bayou, dr 1280 ft lime. Vacuum Oil Co.'s Cameron Meadows 1, Cameron Meadows, dr 5175 ft sand, oil odor. The Texas Co.'s Calcasieu Lake State A-6, set cas at 1972 ft; State East Hackberry 7, sd 4990 ft. F. R. E. Tr. John Vincent 1, Hackberry, ru.

IBERIA PARISH—The Texas Co.'s Vermilion Bay 6, lcn.

IBERVILLE PARISH—Standard's Wilbert 8, Bayou de Glaise, td 3640 ft; Standard's Wilbert 7, Bayou Blue, dk. Standard's L. Baist Cooperage Co. 1, Bayou Blue, dk foundation; E. B. & S. P. Schwing 1, dr 4250 ft hard sand. Shell's Wilbert 5, White Castle, dr 3665 ft sand and lime. Gulf's Gay 1, Bayou Choctau, ru. Tex. Gulf Sulphur Co.'s Wilbert 4, Bayou Choctau, cap rock at 650 ft; Wilbert 5, canal completed; Wilbert 6, lcn; Wilbert 7, lcn.

JEFFERSON PARISH—Humble's Delaware Fur. Co. 1, Barataria dome, dr 6410 ft shale.

LA FOURCHE PARISH—The Texas Co.'s LL & E-Leesville 1, 27-21s-22e, fsh for dr stem at 5300 ft.

PLAQUEMINES PARISH — Humble's Cockrell-Moran 2, Lake Grande Ecaille, lost returns at 1050 ft. The Texas Co.'s Garden Island Bay State 4, fsh 4415 ft. Gulf's Buras Levee Board 1, Rose dome, blew out at 250 ft, created.

ST. JAMES PARISH — Convent Oil Co.'s Jacobs 1, 28-11s-4e, depth 1900 ft.

ST. MARTIN PARISH—The Texas Co.'s Iberville Ind. Co. 3, Hager dome, lcn; St. Martin Ld. Co. 5, Hager, bldg dk. Rycade's Woodyard Lake 1, Bayou Boullion, fsh 6060 ft; State 4, Bayou Boullion, dr 4085 ft water sand.

ST. TAMMANY PARISH—Washington & St. Tammany Drl. Co.'s Coussack 2, 5-6s-10e, dr 785 ft gbo.

TERREBONNE PARISH — Chas. Paggi's Evergreen 2, Houma, sd 1800 ft. La. Gas & Fuel Co.'s Minor Est. 1, Houma, drlg plug at 1800 ft. The Texas Co.'s Bay Junop 2, dr 5525 ft rock; Dog Lake A-3, dr 5345 ft sand rock; Caillou Island State 4, lcn; Caillou Island State 5, dr cap rock 3925 ft; Lake Pelto State 4, lcn; No. 5, lcn; No. 6, capped piling. Bay St. Elaine 5, dk; No. 6, lcn; LLE-Bay St. Elaine 1, lcn; Lake Barre 6, lcn; No. 7, capped piling; Four Isle 4, dr 5875 ft sticky shale.

WEST FELICIANA PARISH — Putnam Synd.'s Como Plantation 1, 54-1s-4w, dr stem stuck at 1100 ft, td 3740 ft, washing over pipe.

NORTH LOUISIANA

Company, Well and Location	Initial Production Bbls.	Depth
BOSSIER PARISH—		
Louisiana O. R. Corp.'s Bodcaw-Fee B-13, 11-19-11	*	2028
DE SOTO PARISH (Holly)—		
Standard Oil Co. of La., Farmer A-4, 5-13-13	611	2890
SABINE PARISH—		
A. C. Glassell, Logan Oil Co. 1, 23-10-13	*	1958
Dixie Oil Co., Parrott 1, 26-8-12	*	2650
Loring Oil Co., Garner 1, 4-7-11	*	2550
Neff, Tr., Turner A-1, 4-7-11	*	2600
Pelican Nat. Gas Co., La. Long Leaf 5, 4-7-11	900	2357
Pelican Nat. Gas Co., Sabine Lbr. Co. 5, 11-7-12	300	2346
TENSAS PARISH—		
Stovall Drilling Co., Miller 1, 18-10-10e	¶¼	1560

BIENVILLE PARISH — Triangle Drilling Co. et al's McDermott 1, 28-18-6w, set 6⅝ cas 2174 ft, found cas loose, will recmt, td 3300 ft. S. P. Borden et al's Thomas 1, 27-16-9w, set 7-inch cas 4033 ft, td 4042 ft. Carter & Dobson's White 1, 9-18-6w, coring sandy shale 2200 ft. Olds & Smith's Brice 1, 15-16-6w, top Cane River 530 ft, arr set 6⅝ cas 2180 ft, td 2230 ft. Cagle Bros.' Lawhon 1, 15-16-8w, dk.

BOSSIER PARISH—Andrews & Davlin's Nattin 1, 15-22-14, set 8-inch cas 1471 ft, sd wo 1546 ft (corrected depth). H. I. Morgan & Shreveport-El Dorado P. L. Co.'s Kendricks B-10, ne sw 22-19-11, 10-inch cas 154 ft, dr 1350 ft. Louisiana O. R. Corp.'s Bodcaw-Fee B-13, se sw 11-19-11, junked abn, td 2028 ft; Bodcaw-Fee B-14, se sw 11-19-11, dk. Bambaugh et al's Allison 1, 10-19-13, sp dr 50 ft.

CADDO PARISH—Texas La. P. L. Co.'s Wall 1, 33-23-16, dr lime 3067 ft; French 1, sw nw 34-23-16, dr lime 3847 ft. Hunter Land & Inv. Co.'s Fee 1, 32-18-14, dr 934 ft.

CATAHOULA PARISH—National Drilling Co.'s Marsh McMillian 1, 26-9-6e, fsh drill collar and bit 2200 ft.

CLAIBORNE PARISH—Triangle Drilling Co.'s Brownfield 1, nw ne 6-19-5w, ds stuck 4049 ft; J. W. Stevenson 1, sw se 6-19-5w, set 9-inch cas 4060 ft, td 4065 ft. Baird Bros. et al's Whittaker1, 30-20-7w, sd 2200 ft. Bough et al's Alexandria 1, 27-20-8w, sd 2200 ft. Prairie O&G Co.'s F. B. Shackelford 1, se ne 30-

23-5w, dk. Louisiana O. R. Corp.'s Langston 10, 19-21-7w, dk.

CALDWELL PARISH—Hudson et al's Burton 1, 36-12-2e, sd 2012 ft.

CONCORDIA PARISH — La. G&F Co.'s Pittsfield Plantation 1, 41-8-10e, dr lime 2202 ft. Glassell et al's Britton-Koontz Nat. Bank 1, 20-8-10e, lcn. Joe Marr et al's Maxwell 1, 35-3-8e, 8-inch cas 2000 ft, sd 3420 ft.

DE SOTO PARISH — Odell & Lawton's Tidwell 1, 11-13-14, set 6⅝ cas, td 3095 ft. Holly Oil Co.'s Talbot 1, 9-13-13, coring lime and shale 2819 ft. J. W. Clark's Tidwell 1, 22-13-14, set 6⅝ cas 2910 ft, 12 ft sand bailed dry, very small show oil and gas, wo, td 2952 ft. W. H. Weichert's H. Smith 1, 31-14-15, sd for fuel 1470 ft. Standard Oil Co. of La.'s Farmer A-4, 5-13-13, set 6-inch cas 2868 ft, 6 ft sand flowing 611 bbls oil day, td 2890 ft. Dowling Bros.' B-1, sw sw 32-14-13, rig up. Neff et al's Dowling 1, se se 18-13-14, rig up. S. A. Guy et al's Dowling Bros. 1, 31-14-14, sd 1354 ft. Ark. La. P. L. Co.'s Johnson 3, 1-11-14, coring lime 2820 ft.

NATCHITOCHES PARISH—W. M. Coates et al's Collins 1, 28-9-10, base chalk 2612 ft, sd wo 3600 ft. J. W. Cooper et al's Cooper 1, 35-11-10, sd 1557 ft; Cooper 2-A, 35-11-10, fsh ds 1150 ft.

RED RIVER PARISH—Lucky Strike Oil Co.'s Chaffraix 1, 33-12-10, coring 2843 ft. T. G. Shaw's Wilkinson 1, se se 4-12-10w, set 6-inch cas 2240 ft, 700 ft oil in hole, made heads while blg, wosr, td 2838 ft (corrected depth).

RICHLAND PARISH — W. C. Feazel's Landrum 1, 6-16-7e, dk. Island O&G Co.'s Noe 1, 3-16-5e, 6-inch cas 2350 ft, top Monroe gas rock 2365 ft, tested sw thru ds 2560-96 ft, sd in shale, wo 2630 ft.

SABINE PARISH — Magnolia Pet. Co.'s Giaque 1, 26-7-14, dr hard lime 3865 ft. McDaniels et al's Batson 2, 16-8-12, dr 2215 ft. Loring Oil Co.'s Middleton 1, 26-8-12, set 6⅝ cas 2329 ft, dry wo 2650 ft; Middleton 2, 26-8-12, set 6⅝ cas 2332 ft. Lacey Barkett Oil Co.'s D'Anna 1, 26-8-12, set 6⅝ cas 2194 ft, hfo wosr, td 2412 ft. Lacey Jesup Oil Co.'s Brown Lbr. Co. 1, 28-8-10, sp 10-inch cas 100 ft, dr 750 ft. Lacey Prod. Co.'s W. M. Cooper 1, 30-8-11, dk; Cooper 2, nw sw 32-8-11, lcn. A. H. Teat's Craig 1, ne ne 25-8-12, top marl 2329 ft, set 6⅝ cas 2329 ft, bailed dry, show gas, wo 2450 ft. Eylers O&G Co. et al's Fraser 1, nw sw 10-8-11, sp and sd 30 ft (formerly W. G. Gray et al's test) R. L. Gay, Tr.'s Bowman-Hicks 8, 18-7-13, cemtd back to 2392 ft, wo cement to set, old td 2552 ft; Bowman-Hicks 9, ne sw 18-7-13, cor 2000 ft; Sabine Lbr. Co. A-1, se ne 1-7-12, dk. D. H. Reddick et al's Scretchfield 1, 18-9-12, sd 3310 ft. Paramount O&G Co.'s Woolums 1, 11-6-12, set 6-inch cas 2310 ft, dr 2320 ft. Zeke Lohman's Wyatt Lbr. Co. 1, 18-4-11, partly rigged up wo. Lohman & Walker's Hubley 1, 21-7-11, top marl 2461 ft, set 6-inch cas 2432 ft, td 2474 ft. Pelican Nat. Gas Co.'s La. Long Leaf 4, 4-7-11, pumping wo gauge, td 2557 ft. La. Long Leaf 5, nw sw 4-7-11, flowing 900 bbls, td 2357 ft; Sabine Lbr. Co. 5, nw ne 11-7-12, set 6-inch cas top marl 2322 ft, flowing 300 bbls day, td 2346 ft; La. Long Leaf 6, nw sw 4-7-11, dk. Philp et al's Turner 1, nw nw 4-7-11, lcn. G. D. Neff, Tr.'s, Turner A-1, 4-7-11, set 6⅝ cas 2266 ft, dry abn, td 2600 ft. Loring Oil Co.'s Garner 1, 4-7-11, set 6⅝ cas 2200 ft, dry abn, show oil, td 2550 ft; Bowman-Hicks 13, 2-7-12, set 6⅝ cas 2290 ft. Stacey et al's Polly 1, 18-8-12, lcn abn. Texas Co.'s Maines et al 1, ne se 5-7-11, dk. Longoria et al's Belton 1, 31-9-12, rig up. A. C. Glassell's Logan Oil Co. 1, 23-10-13, dry abn, td 1958 ft. Franks et al's Hays 1, 22-8-12, sd 1325 ft. David M. Lide's Ponder 1, 15-7-11, top marl 2393 ft, top chalk 2407 ft, tested dry wo 2601 ft, 6-inch cas 2385 ft. Dixie Oil Co.'s Parrott 1, se se 26-8-12, top chalk 2364 ft, 6-inch cas 2368 ft, dry abn, td 2650 ft. Lyons et al's Williams 1, sw se 32-8-11, 6-inch cas 2261 ft, junking to abn, td 2444 ft. David M. Lide's Sabine Lbr. Co. 1, 12-7-12, lcn. W. M. Coates' Sabine 1, 1-7-12, sp set 10-inch cas 103 ft. Wilson & Sons' Gandy-Garrett 1, 4-5-12, ur 1050 ft. Toteco Oil Co.'s La. Long Leaf 1, 18-6-12, bailed down 1650 ft, bridged over, dr out bridge, tested 20,000 bbls hot sw, td 4077 ft, set 6⅝ cas 3985 ft. Tom David's Smith 1, 27-8-10, sd 1560 ft. Merritt et al's La. Long Leaf 1, 33-8-11, dr 1650 ft. Standard Oil Co. of La.'s Bowman-Hicks 1, 25-8-12, top marl 2360 ft, set 6⅝ cas 2350 ft, dr 2368 ft. Tarver et al's Sabine State Bank 4, 26-8-12, set 6⅝ cas 2324 ft, bailed dry wo, td 2482 ft. H. W. Perritt's Bowman-Hicks 1, 2-7-12, dr 1400 ft. Sabine Synd.'s Pearce 1, 10-7-11, sp, set 10-inch cas 100 ft. R. B. Whittle's Sabine Lbr. Co. 1, sw sw 36-8-12, lcn.

TENSAS PARISH—Seip et al's Fowler 1, 10-10-10e, dr 570 ft. A. R. Willis' Curry 1, 39-11-12, sd wo 2780 ft. Stovall Drilling Co.'s Miller 1, 18-10-10e, plugged back and set 6-in cas 708 ft, making 19,000 ft gas 125 lbs. rock pressure, td 712 ft, old td 1560 ft.

WEBSTER PARISH—D. H. Coyle, Tr.'s, Frazier 1, ne se 27-23-11, dk.

WEST CARROLL PARISH—Ark. La. P. L. Co.'s Griffith 1, ne nw 17-22-10, 10-inch cas 1301 ft, dr hard chalk 2820 ft.

ARKANSAS

Company, Well and Location	Initial Production Bbls.	Depth
JOHNSON COUNTY—		
Conn Gables et al's Joe Holing 1, 20-9n-25w	*	2238
SEBASTIAN COUNTY—		
Mansfield Gas Co., Fee 1, 1-4n-31w	¶½ 2000	

CHICOT COUNTY—H. R. Smith's Lytle 1, 31-18-3, did not make ds test at 2903 ft, dr 2910 ft.

CLAY COUNTY—S. C. Jeffus, Tr.'s, Underwood 1, nw se 4-20-8, 10-inch cas 303 ft, dr 330 ft.

CLEBURNE COUNTY—Donnell et al's Fee 1, 33-11-9, fsh bailer on bottom, td 3640 ft.

COLUMBIA COUNTY—J. W. Olvey et al's Kate George 1, nw sw 19-18-20, set 12½-inch cas 288 ft, dr 1900 ft.

GARLAND COUNTY—H. H. Given's Garrett 1, 1-3n-19w, dr lime 3773 ft.

HOT SPRINGS COUNTY—John Watkins, Tr.'s, Cunningham 1, 11-5-16, set 12½-inch cas 42 ft, sd 100 ft. Cleary Bros. et al's Hinson 1, 19-4s-16w, set 6⅝ cas 1306 ft, sand 1352-54 ft, bailed 20 bbls fluid 50 per cent oil, ur 6⅝ cas to 1348 ft, dr hard gray lime 1375 ft.

JOHNSON COUNTY—Ark. La. P. L. Co.'s Kelly 1, sw se 14-10-24, set 8-inch cas 1675 ft, dr 1900 ft; Hudson 1, se se 14-10-24, dr hard sand 1205 ft. Blackwell O&G Co.'s Wyver 1, 21-8-23, jarring out 6-inch cas 2100 ft, td 5600 ft. Conn Gables et al's Joe Holing 1, 20-9n-25w, dry, abn in hard sand, td 2238 ft. River Valley Dev. Co.'s Collier 1, se se 21-9n-25w, lcn.

LA FAYETTE COUNTY—Crawford Drilling Co.'s Vaughan 1, 25-19-25, rig up. McIver et al's Hattle 1, nw ne 1-20-26, rig up.

LAWRENCE COUNTY—Marguerite Dev. Co.'s Broadway 1, 31-17-1, sd 45 ft.

LITTLE RIVER COUNTY—Buck Oil Co.'s Taafe 1, 25-12-32, sd 2505 ft.

LINCOLN COUNTY — B. F. Thompson's McGhee 1, 8-8-7, lcn abn, leases expired.

LOGAN COUNTY—Ark. La. P. L. Co.'s Jno. Jansen 1, ne ne 35-8-24, rig up. M. W. Greesom's Parks 1, 21-8-24, sd 1309 ft, J. H. Flowers' White 1, 13-5-26, ur 5 3/16-in cas 3570 ft, td 3610 ft.

MADISON COUNTY—J. W. Baxter's Hallem 2, cent sec 17-16-26, dr 290 ft.

MILLER COUNTY—E. & F. Oil Co.'s E. L. Beck 1, 36-15-26, set 6⅝ cas 2792 ft, cored sand at 2951 ft, arr set 4½-inch cas. Lenz et al's Johnson 2, 24-15-26, coring 3100 ft; Johnson 3, ne nw 24-16-26, dr 123 ft. Bullock Oil Co.'s Hervey 1, 2-15-26, set 12½-inch cas 152 ft, dr 175 ft. East Texas O&G Co.'s Hervey 1, 2-15-26, set 10-inch cas 150 ft, sd, wo 8-inch cas 900 ft. O'Mara et al's Person 1, 31-15-25, lcn. Fitzwater et al's Beck 1, sw se 33-15-26, set 10-inch cas 85 ft. Salzer & McRae's Rose 1, ne nw 9-16-26, set 10-inch cas 98 ft.

OUACHITA COUNTY — Belmont et al's Dean 1, 16-15-17, top red beds 2765 ft, fsh bit and collar, td 2907 ft. A. B. Turner, Tr.'s, Brown 1, 23-15-18, top Nacatosh 1663 ft., tested 55 joints mud, show oil thru ds 2172-78 ft, ds hung, junked abn hole in sandy shale, td 2183 ft, skidded 55 ft east, sp dr 20 ft. Graves et al's Walker Tr. 1, sw sw 9-14-18, top Nacatosh 1352 ft, set 6⅝ cas 1845 ft, sandy oil shale 1869-73 ft, wosr, td 1873 ft. Copenhaver et al's Elliott 1, se se 11-15-17, dr rock 926 ft.

PIKE COUNTY—Henderson et al's Tilyou 1, 26-8-24, show heavy oil 567 ft, dr 1630 ft. E. R. Henderson's Lee 1, sw se 31-8s-24w, lcn.

POPE COUNTY—Ark. La. P. L. Co.'s McFadden & Brooks 2, ne sw 15-9-21, dr 13 3/8 plug 1900 ft.

SCOTT COUNTY — Heavener O&G Co.'s Reser 1, 36-4-26, fsh tools, td 1530 ft. Ark. Valley Gas Co.'s Turner 1, se se 27-5n-30w, lcn.

SEBASTIAN COUNTY—M. W. Greesom's Spears 1, 9-7-29, tested sw, wo td 3515 ft. Mansfield Gas Co.'s Fee 1, 1-4n-31w, 500,000 cu ft gas, td 2000 ft. Lavaca O&G Co.'s Davis 1, nw ne 29-8-30, set 8-inch cas 200 ft, dr 1400 ft.

UNION COUNTY—Hickman et al's Hogg 1, 35-16-17, top Graves sand 2351 ft. Marine Oil Co.'s W. B. Thompson A-5, sw ne 10-18-13, sp set 10-inch cas 300 ft. P. Winn Est. F-1, 10-18-13, hole full fluid 50 per cent sw, arr blow with air, set 6⅝ cas 3595 ft, td 3604 ft. Oilfields Corp.'s J. A. Simmons 1, nw nw 13-18-13, tested 3 joints mud and oil thru ds, 2301-2326 ft, tested dry ds 2293-2301 ft, dr 2775 ft. Rice et al's Whatley 1, 7-17-15, dr 100 ft. Malloy & Co.'s Burns 7, nw nw 31-17-15, set 8¼-inch cas 2148 ft, 35 ft fluid in hole, td 2213 ft. J. E. Crosbie, Inc., et al's G. L. Murphy 1, 13-16-16, 800 ft 20.6 gravity oil, hole 5 ft sand, wosr td 2740 ft. H. L. Hunt, Inc.'s, Swilley 5, ne ne 28-16-16, set 6⅝ cas 2678 ft, 2000 ft oil trace sw in hole wosr td 2689 ft; Swilley 6, se se 21-16-16, lcn. J. E. Trammell 1, sw nw 28-18-12, dr 4340 ft.

WASHINGTON COUNTY—Taylor et al's Runny 1, 1-13-29, dr 1167 ft. Lincoln Lease Holding Synd.'s Townsite 1, 30-15-32, ta 1500 ft. C. H. Willoughby's Jones 1, 34-16-30, sd 2150 ft. O'Hara & Shetterley's Boyd 1, 12-16-32, ta 850 ft. Delbert Graves' Cunningham 1, 14-15-32, sd in gray sand 602 ft.

VAN BUREN COUNTY — J. S. Martin's Scanland 1, 5-9-13, sd 50 ft.

YELL COUNTY—T. Luckett's Balcon 1, 36-7-21, fsh tools, td 5710 ft.

MISSISSIPPI

Company, Well and Location	Initial Production Bbls.	Depth
RANKIN COUNTY (Jackson Dist.)—		
Pearl River O&G Co., Pate 2, 12-5-1e	¶40	2439
Love et al, Brown 1, 12-5-1e	¶40	2402
HINDS COUNTY (Jackson Dist.)—		
Jackson O&G Co., Mayes 1, 2-5-1e	¶20	2585
YALABOUSHA COUNTY (Water Valley Dist.)—		
J. D. Collett et al, Blackmer 1, 14-11s-4w	*	2434

ALCORN COUNTY — Alcorn Pet. Co.'s Matthews 1, 14-2s-7e, fsh, td 2735 ft.

ATTALA COUNTY—Ark. La. P. L. Co.'s Moore 1, se nw 2-15n-5e, sp dr 200 ft.

CLAY COUNTY—Ohio Oil Co.'s Cantrell 1, ne ne 16-15-5e, elev 270 ft, set 13⅜ cas 1389 ft, dr hard sandy lime 1965 ft.

COVINGTON COUNTY (Collins Dist.)—Mississippi Gulf O&G Co.'s Fee 1, 36-8n-16w, lcn.

CHICKASAW COUNTY — Hightower & Golson's Fleming 1, 30-13-3, driving 8⅝-inch cas at 1534 ft.

GRENADA COUNTY — Carter Oil Co.'s Dubard 1, nw nw 18-22-4e, dk.

HINDS COUNTY (Jackson Dist.) — Mrs. Ella Rawls Reeder's State Land 1, sw nw 25-6-1e, sd 2905 ft. Jackson O&G Co.'s Central Cotton 1, sw nw 3-5-1e, dk; Mayes 1, nw sw se elev 273 ft, est 20 mil ft gas, td 2466 ft, old td 2685 ft, top midway shale 2360 ft, top base Midway chalk 2460 ft. Love Pet. Co.'s Morton 1, sw sw 34-6-1e, sp set 15½-inch cas 47 ft; Maley 1 se nw 15-5-1e, elev 257.3 ft, top Midway shale 2387 ft, top Midway chalk 2487 ft, set 6⅝ cas 2487 ft, made 25 bbls 13.1 grav oil day by heads with 500 bbls sw, wosr, td 2495 ft. Miss. Tex. Oil Co.'s Negro Fair Assn. 1, nw se 28-6-1e, sd acct bad seat, 6-inch cas set at 2379 ft top Midway shale 2420 ft. Tri-State O&G Co.'s Wilson 1, se ne 23-6-1e, dk. Universal O&G Co.'s Holliday & Ross 1, nw sw 8-6-2e, ta 2653 ft; Sharbrough 1, sw se 28-6-1e, set 10-inch cas 88 ft, wo. Miss. Pet. Co.'s Solvent 1, sw sw 14-5-1w, sd wo at top of rock 2710 ft; Baptist Orphanage 1, se se top Midway shale 2422 ft, wo cas, td 2475 ft. Hawkeye Gas Co.'s Webster 1, ne nw 15-5-1e, elev 269.6 ft wo 4½-inch cas to run in bad

That concave side

Means dollars saved for You—

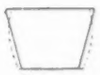


Fig. 1

Just pick up a V-belt that is built with the ordinary **straight sides** and bend it as it bends when it goes around a pulley. Here is what you will see:

As the belt bends, its top **narrows**, its bottom **widens**, and the sides of the belt **bulge out**. (See figure 1). This shape does not fit the sheave groove—and there are two disadvantages:

(a) The bulging produces uneven wear along the sides of the belt and (b) the full side of the belt is not uniformly gripping the pulley —a definite loss in transmission efficiency.

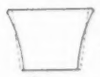


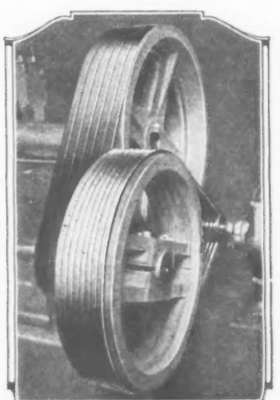
Fig. 2

Now bend, in the same manner, a Gates Vulco Rope—the belt with the **concave** side (patent pending). As this belt bends, you will see it assume the shape shown by dotted lines in figure 2. This shape exactly fits the sheave groove—with two important results:

(a) The wear is evenly distributed and this means longer life and (b) the entire side of the belt uniformly grips the pulley and this means full delivery of power.

PATENTED CONSTRUCTION

A core of strong endless cords (to give the belt strength) with a bias cut cover (to protect the core and stand long wear) are both Gates Patents. United States patents 1,354,-738 and 1,400,539 protect the principle and the construction of a V-belt having a center of endless cords with a bias cut cover.



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A & B Drilling Co., Oklahoma City.
Capitol Drilling Co., Oklahoma City.
Prince & Prince, Electra, Texas.
Clark & Cowden, Duncan, Okla.
Independent Oil Co., Oklahoma City.
G. E. Gilberth, Oklahoma City.
Golden & Cochran, Wink, Texas.
Haynes Drilling Co., Wink, Texas.
Murphy & Graham, Seminole, Okla.
Steinberg & Yerkee, Seminole, Okla.
Fain-McGaha, Wichita Falls, Texas.
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CHICKASHA, OKLAHOMA

6⅝ string set at top Midway chalk 2474 ft, topped Midway shale 2375 ft, td 2476 ft. Howard Oil Co.'s Jackson College 1, nw nw 9-5-1e, mov in rig. Atkisson et al's Wiggins 1, nw ne 33-6-1e, dk. Kennedy et al's Fee 1, ne ne 34-6-1e, lcn. Gulf Ref. Co.'s McLaurin 1, sw ne 30-6-2e, sp set 15½-inch cas 87 ft, dr sandy shale 600 ft. Cane River O&G Co.'s Kabbes 1, ne sw 15-5-1e, dr sandy shale 1865 ft.

JASPER COUNTY (Bay Springs Dist.)—Bay Springs Pet. Inc.'s J. H. Keyes 1, nw ne 21-2n-10e, dk.

KEMPER COUNTY (De Kalb Dist.)—W. W. Jones' Rosenbaum 1, lcn not given, dk.

LA FAYETTE COUNTY—F. E. West et al's May 1, 22-10-1w, rigged up wo.

MADISON COUNTY (Jackson Dist.)—Miss Pet. Co.'s Raymond 1, nw sw 32-7-2e, set 12½-in cas in blue gmbo 706 ft. wo.

MONROE COUNTY (Amory Dist.)—Amory Dev. Co.'s Bourland 1, 2-13-19, sd in brown sand 3007 ft. P. J. McAlpine's Cowart 1, 2-12-19, dr brown shale 300 ft. Associated Royalties' School Board 1, 16-15-17w, sd 60 ft. Amory Pet. Corp.'s Harris 1, nw nw 18-13s-17w, dk. Carter 3, se se 7-13s-17w, arr set 10-in cas in hard gray sand at 566 ft.

RANKIN COUNTY (Jackson Dist.)—Feazel O&G Co.'s Cox 1, 12-5-1e, dk. pat. Sabine O&G Co.'s Rankin Dev. Co. 1, sw ne 6-5-2e, dk. Love Pet. Co.'s Moore 1, 28-6-2e, sd 900 ft. Gulf Co.'s Hamilton Est. 1, sw sw 4-5-2e, elev. 284 ft. top Midway shale 2357 ft. top Midway chalk 2620 ft, set 9-in cas 2610 ft, td 2626 ft. Love et al's Brown 1, se se 12-5-1e, elev. 269 ft, top shale 2306 ft, top chalk 2402 ft, making 40 mil ft gas td 2407 ft. Muse 1, se se 32-7-4e, dk. Pearl River O&G Co.'s Pate 2, se se 12-5-1e, top Midway shale 2336 ft, set 7-in cas 2379 ft, top chalk 2435 ft, est 40 mil ft gas td 2439 ft. (corrected depth). Pioneer O&G Co.'s (formerly Redmond et al) Grave 1, nw se 12-5-1e, dr 1625 ft. Wallace O&G Co.'s Cobb 1, se ne 12-5-1e, rig up.

WARREN COUNTY (Vicksburg Dist.)—Vicksburg O&G Co.'s Dornbusch 1, 8-18-5, sd, 1350 ft. Dixie Pet. Co.'s (formerly Moore et al), Clark 1, 31-17-5, dk.

WEBSTER COUNTY—Cumberland Oil Co.'s Henley 1, 15-21-1, ta 1865 ft.

WINSTON COUNTY (Louisville Dist.)—Mississippi Drilling Co.'s Scarbrough 1, nw nw 15-13n-14e, dr black shale 1094 ft.

YALABOUSHA COUNTY (Water Valley Dist.)—J. D. Collett et al's Blackmer 1, se nw 14-11-4w, shot 6 qts nitroglycerine attempt dislodged frozen 6-in ds failed recover ds junked abn td 2434 ft.

ALABAMA

HOUSTON COUNTY—J. R. Sealey's Fee 1, 13-1n-27e, changing from cable tools to rotary dt 3100 ft.

LAUDERDALE COUNTY—P. J. McAlpine's O'Neal Hrs. 1, 8-2s-13w, sd in white limestone td 2525 ft.

MORGAN COUNTY—Albany-Decatur O&G Co.'s English 1, 6-6-4, fsh cas 4130 ft.

SUMTER COUNTY—B. W. Bates' Fee 1, 3-18-1w, ta 1200 ft. Fee 2, 3-18-1w, rig up wo.

WASHINGTON COUNTY—Hobson et al's Wilson 1, 27-7-1w, sd in limey shale 881 ft. Hobson Bros. 1, 9-8-2w sd 1450 ft. Oscar Brown's U. S. Land & Cotton 2, 25-3-2w, sd 700 ft.

TENNESSEE

DECATUR COUNTY—Chester County O&G Co.'s Montgomery 1 dr sand and lime 1995 ft.

NORTHERN CALIFORNIA

Company, Well and Location	Initial Production Bbls.	Depth
LOMPOC—		
Prairie Oil & Gas' Shyvers 1, 11-7-35	*	5587
PORTERVILLE—		
Cummings Pet. Corp.'s No. 1, 27-22-27	*	1300
Rayatt Oil Co.'s Hinshaw 1, 34-22-27	*	1085
Terra Bella Drilling Co.'s Miami 1, 23-22-27	*	695

KERN COUNTY

BELRIDGE—General Pet. Corp.'s Berry 1, 30-28-21, dr brown shale 2575 ft. Ohio's Bloemer 1, 36-27-20, rig. Reward Oil Co.'s Associated 1-A, 34-27-20, rigged up. Richfield's Belridge 1, 22-27-20, dr shale 5460 ft. Standard's McPhail 1, 36-27-20. rig. Texas' Martin 1, 22-27-20, rigging up rotary. Union's Bacon 1, 27-28-20, lcn. K. C. Wallace's No. 1, 32-29-21, repairing rig, td 3775 ft.

BUENA VISTA HILLS—Federal Drilling Co.'s No. 1, 20-31-24, dr shale 3140 ft. Midland Exploration Co.'s No. 1, 34-31-24, lcn.

BUTTONWILLOW — Nordon Oil Corp.'s Salisbury 1-A, 7-29-24, dr shale 5115 ft. Superior's KCL-1, 32-29-25, lcn.

DEVILS DEN—Standard's Alferitz 1, 14-25-18, dr shale 935 ft.

EDISON—Petroleum Securities Co.'s Johnson-Moss 1, 14-29-29, dr hard sand 3215 ft.

EL TEJON—J. J. Ritchie's No. 1, 33-11-19, dr brown shale 4850 ft oil showings.

McKITTRICK — California Oil Producer's Wisecarver 1, 30-30-22, sdtr iron, td 5050 ft.

PATTIWAY—H. A. Bardeen's Ramsey 1, 10-10-23, 6⅝-inch cas cmt 3327 ft, td 4175 ft, oil and gas showings.

SEMITROPIC — Shell's Williams 1, 17-27-23, dr shale 7450 ft.

WEED PATCH—Mohawk Oil Co.'s Wharton 1, 32-20-29, dr out cmt below 15-inch cas at 876 ft. Shell's Porter 1, 29-30-29, dr shale 915 ft; Porter Day 1, 29-30-29 dr sandy shale 5968 ft.

CAMPBELL'S POINT — Bolsa Chica Oil Corp.'s Augur 191-1, 24-4-9, dr brown shale and hard sand 3200 ft, slight oil showings.

GATO RIDGE — Barnsdall's Tegnazzini 1, 9-8-32, dr shale 5212 ft.

GOLETA—General Pet.'s More 3, dr shale and gas sand 2620 ft. George W. Johnson's Duncan 1, sdtr iron, td 3970 ft.

LOS ALAMOS—N. S. Wilson's No. 1, 2-7-33, bailing water, td 1502 ft.

NAPLES—J. H. Cochran's No. 1, 7-4-29, dr shale 4078 ft.

ORELLA—General Pet.'s Erburu 8, dr oil sand 2765 ft; Erburu 9, lcn; Erburu 10, lcn.

POINT CONCEPCION—Standard's Gerber 1, dr gray sand 6586 ft.

PURISIMA — Vaqueros Major Oil Co.'s Union Annex 2, 6-7-33, completed and shut in, td 3210 ft; Union Annex 3, sp; Union Annex 4, grade.

SANTA MARIA—O. C. Field Gasoline Co.'s Bradley 1, 8-9-33, 6⅝-inch cas cmt 5-25 ft, td 5267 ft, will make test.

VENTURA COUNTY

HOPPER CANYON—Rio Grande's Lankershim 1, 13-4-19, co 1110 ft td 1820 ft.

PIRU—A. N. Macrate's Torrey-Eureka 1, 32-4-18, rigging up rotary.

RINCON — Chanslor-Canfield Midway Oil Co.'s Hobson A-2, 23-3-24, will shoot fsh at 7450 ft, td 7521 ft, well produced oil on test at higher level.

SANTA MONICA MOUNTAIN—Olympic Corp.'s Calabasas 1, 18-1-17, fsh for drill pipe, td 5669 ft.

SANTA PAULA—California Republic Pet. Corp.'s Chimes-Darling 1, 23-4-21, rig, sd. George C. Thompson's No. 1, 15-4-21, co to run 6⅝-inch cas td 2360 ft.

SESPE — Superior's Kirtlan 1, 15-4-21, dr hard sand 2414 ft.

SOUTH MOUNTAIN — Ring Pet. Corp.'s Converse 1, will deepen from 4910 ft, well produced some oil at higher level.

VENTURA—Prairie Oil and Gas' Sexton 1, 30-3-22, dr out cmt below 9-inch at 7327 ft, td 7518 ft.

MISCELLANEOUS

FRESNO COUNTY—Petroleum Securities Co.'s Gatchell 1, 28-20-16, lcn. Carruthers Oil and Land Co.'s Barritt 1, 4-17-20, rigging up rotary. Associated's Mitchell-Jacalitos 1, dr sandy shale 1855 ft.

KINGS COUNTY — Knudsen and Smith's No. 1, 36-23-17 lcn. Kettleman Lakeview Oil and Gas Co.'s No. 1, 11-23-19, dr out cmt below 8¼-inch cas at 930 ft, td 972 ft. Murphy Oil Co.'s Brennan 1, 20-23-20, dr gray sand 475 ft.

MENDOCINO COUNTY — Twin State Oil Co.'s Soldani 1, 14-12-17, dr shale 4915 ft.

MONTEREY COUNTY—Standard's Piedmont 1, 23-22-7, dr gray sand 5707 ft.

SAN LUIS OBISPO COUNTY—Fireman's Pet. Corp.'s Carpenter 1, 13-32-13, rigging up rotary. Continental's Hellman 1, 26-25-11, sp. Texas Pacific Coal and Oil's No. 1, 25-32-14, fsh for drill pipe 4430 ft.

TULARE COUNTY—Enterprise Oil Co.'s Dennis 1, dr slate 666 ft. Kettleman East Side Trust's No. 1, 21-22-27, dr shale 915 ft. Larson Oil Co.'s Best 1, 11-23-27, sr 1150 ft. Paul M. Lewis' No. 1, 15-22-27, placing on pump, plugged to 730 ft, td 1115 ft. Mills and Wilson's No. 1, 35-22-27, pumping water and some oil, td 913 ft. Miller and Sylvan's No. 1, 11-23-27, dr shale 820 ft. Roetner et al's No. 1, 34-22-27, dr shale 1148 ft. Terra Bella Drilling Co.'s Rusling 1, 34-22-27, 6⅝-inch cas cmt 911 ft, td 930 ft. Turk and Campbell's Nevins 1, 34-22-27, dr hard shale 1342 ft. Western Oil and Exploration Co.'s Gardiner 1, 35-22-27, co 1020 ft; Porch 1, 21-22-27, rig. Inland Valley Oil and Gas Co.'s Smith-Rea 1, 24-17-24, sr to cmt 6¾-inch cas. td 2060 ft.

YOLO COUNTY—George F. Getty's Guinda 1, 23-12-3, sd 2007 ft.

SOUTHERN CALIFORNIA

ATHENS—McKeon Oil Co.'s No. 1, rigging up rotary.

BELL—Cudahay Community Oil Assn.'s No. 1, rigging up rotary.

CORONA—Western Gulf's Abacherli 1, dr hard sand 600 ft.

DOMINGUEZ—Tenacity Oil Co.'s Del Amo 1, sd 8575 ft.

EL MONTE—Los Gatos Oil Co.'s Sing 1, dr gray sand 2230 ft.

ENCINO—San Val Oil Co.'s No. 1, rig.

FULLERTON — Standard's Bastanchury 1, dr shale 6975 ft.

HERMOSA—California Ventura Oil Co.'s Sadler 3, lcn. Westwood Pet. Co.'s No. 1, new lcn.

MONTEREY PARK—Celiot Oil Co.'s Jepson 1, swabbing for production test, water and trace of oil, td 5277 ft; 700 ft 6⅝-inch perforated pipe on bottom.

NEWHALL—Consolidated Oil Co.'s Hammond 1, co 2238 ft. National Securities Co.'s Seeple 1, dr shale 2260 ft. York and Smullin's Clampitt 5, dr broken rock and shale 350 ft.

NEWPORT—Standard's Irvine 1, dr shale and streaks of sand 2616 ft.

PLAYA DEL REY—Olympic Oil and Realty Co.'s No. 1, dr gray sand 4358 ft. West Port Oil Co.'s No. 1, dr gray sand 4680 ft.

POMONA—Lamona Oil Assn.'s No. 1, dr granite 961 ft.

PUENTE HILLS—Arden O.l Co.'s Bidart Rowland 1, dr shale 3298 ft. Bardeen Oil Co.'s Barnadette 1, rigging up rotary. Marcell Pet. Co.'s Marcell 1, co 3085 ft. Rio Hondo Pet. Co.'s Rowland 1, sd 3725 ft. C. F. Shannon's No. 1, running 6⅝-inch cas, td 4595 ft.

SAN FERNANDO—Shell's Andrews 1-1, dr hard sand 5600 ft.

SANTA FE SPRINGS—Union's Orchardale 1, sr 5520 ft.

SAN JUAN CAPISTRANO—Okay No. 2's Foster 2, dr shale 4735 ft.

COLTON — Sancal Properties' No. 1, new lcn.

WYOMING

BIG HORN—Westfield Oil, Inc., 1, 24-54-95, gas at 510 ft. Wisconsin Holdings, 5-55-97, sd 665 ft. Yellowstone Pete Co.'s 1, 7-57-97, oil show 4080 ft.

CARBON—Producers O&G Co., Blivens 1, 35-13-92, sd 2222 ft. Midwest's U. P. 27, 11-20-81, fsh bit 695 ft.

CONVERSE—Converse O&G Co., 27-33-72, sd 2000 ft. Pioneer O.l Co., 5-31-70, prep to resume at 3300 ft.

FREMONT—Texas Prod. Co.'s State 1, 36-44-96, try jar down 6⅝-inch, td 4485 ft. Producers & Refiners 1, 33-34-92, ream 4554 ft. Yellowstone Oil Co.'s 1, 15-38-92, dr 185 ft. Val B. Maghee et al's 1, 35-33-99, dr bel 1000 ft. Big Horn Oil Co., 15-38-94, rig. Ward O&G Co., 28-34-90, ready to spud.

HOT SPRINGS—Midwest Ref. Co.'s Weeks 8, 6-44-98, 6¼-inch landed on bottom. Gebo Cons. 1, se 23-44-95, sd 1410 ft, with oil showing.

JOHNSON—Tarrant et al, 4-43-82, resum at 2150 ft.

LINCOLN—Mtn. Oil Corp.'s 1, 36-25-116, ur to set 13⅜-inch at 1112 ft. Wyo. Prod. Co.'s 1, 14-24-113, set 12½-inch at 1030 ft.

NATRONA—Cuyler Oil Co., sw 24-36n-86w, 10 M ft gas 1305 ft. Summit Oil Co., nw 21-33n-80w, dr bel 600 ft. Tarrant et al, ne nw

25-31-82, sd for winter 465 ft. Golden West Oil Co., 36-36-81, dr 1100 ft. Midwest's 11, nw 32-34n-77w, spud.

NIOBRARA—West Va. Synd., ne 7-35-62, ur to 978 ft.

PARK—Resolute Oil Co., 17-27-101, dr bel 8020 ft. Cody Pete Co.'s Danker 1, se 22-57-98, rig.

SWEETWATER—Vermillion Oil Co.'s 1, se 16-12-99, dr 3175 ft.

UINTA—Park City O&G Co., nw 6-15-113, dr bel 2000 ft.

WESTON—Gose Synd., 1, 28-47-65, stand. Updike et al's Fiddler Creek 1, 11-45-64, sd 1200 ft. LaFaivre Oil Synd., se 29-45-68, spd.

MONTANA

BIG HORN—Embar Drlg. Co., 21-6s-36e, to dd from 3056 ft.

BROADWATER—Barth et al, near Winston, to res at 1000 ft.

CASCADE—Andover Oil Co.'s Floweree 1, se 20-21-2w, dr 575 ft.

CHOTEAU—Coolidge & Coolidge, se 32-25-17e, Lehnfelt 1, sd 50 ft.

FALLON—Monarch Gas Co., 12-5n-59e, test gas 1885 ft.

FERGUS—Melton Corp., 1, se 24-21s-17e, no report. Northern States Oil Co.'s Woodward 1, se 20-14n-24e, run 10-inch, td 900 ft.

GLACIER—Glacier Oil Co.'s Omberg 1, nw 33-35-5w, 1½M in stray at 2693 ft. Texas Prod. Co.'s 1, 13-35n-6w, cem td 2836 ft. Fulton Pete Corp.'s Blackfeet 1, ne 28-36n-12w, install Diesel engine, td 850 ft. O'Neil's Michaels 1, se 28-36-5w, dr 1775 ft. B. & H. Oil Co.'s Haines 1, se 2-34-6w, dr 700 ft. Jeffries-Hoerr, Dawson 1, ne 7-31-12w, dr bel 2670 ft.

GOLDEN VALLEY—Texas Pacific's 1, sw 21-8s-21e, shutting off water 1540 ft.

HILL—Jones Oil Co.'s Carruth 1, sw 34-33-12e, rig up and sd.

LIBERTY—Northland O&G Co.'s Yurman 1, 36-33n-6e, dr 3460 ft. Sunburst O. & R. Co.'s McLaren 1, se 9-37-6e, sd 3115 ft. Utopia Oil Co.'s Eleanor Ass'n 1, sw 11-33-6e, wait pipe, td 3190 ft. Perkins et al's Brown 1, nw 24-35-4e, cem 12½-inch, td 475 ft. West Nat'l Gas Co.'s 1, ne 23-37-4e, 8-inch 1660 ft.

MUSSELSHELL — Minnesota-Flatwillow's Ivanhoe 1, 7-11-31, dr bel 1320 ft. Laffea Oil Co.'s 1, 6-10n-25e, dr bel 900 ft.

PETROLEUM — Oregon-Flatwillow's 1, 3-13n-26e, dd from first Cat Creek.

PHILLIPS — Thorsen & Bull Creek Dome Co.'s 1, 2-24n-23e, dr 798 ft.

PONDERA—Miller Bros.' Bruins 1, nw 17-28n-1w, rig up, spd. Oil Well Drlg. Co.'s Van Daele 1, ne 36-30w,38, ur 4215 ft.

POWDER RIVER—Creel et al, 7-8s-50e, dd to Muddy to set cas at 1000 ft.

ROSEBUD—Prairie O&G Co.'s 1-X, 26-10-39e, dr bel 1735 ft, gray shale. Prairie O&G Co.'s 1 on Contract 4, 28-10-38, dr 550 ft.

SHERIDAN — Sheyenne O&G Co.'s 1, nw 15-36n-53e, to res 1400 ft.

TETON—Andover Oil Co.'s Carlson 1, 5-24-4w, mvg in fuel to resume at 500 ft.

TOOLE—Internat'l Ry. Hold Co.'s 1, 26-35-3e, sd 2410 ft. Liquid Gold Oil Co., Roberts 1, ne 25-36-12, rigging up.

VALLEY—Perkins-Jones, Opheim 1, 31-37n-38e, dr bel 1200 ft.

YELLOWSTONE—Broadview O&G Corp., nw 18-3n-23e, mvg in.

COLORADO

ADAMS—N. M. Slatt's Hills 1, se 27-26-64w, 10-inch at 2500 ft.

ARAPAHOE—McDebb Drlg. Co.'s Fitzsimmons 1, 7-45-55, run 6⅝-inch, td 5692 ft. Merritt et al, U. P. 1, nw 17-5s-64w, stand 1600 ft.

ARCHULETA—Stand. of Colo., Fitzhugh 1, se 34-33n-1e, stand 520 ft. Stand. of Colo., Crowley 1, 10-32-2, gas 248 ft.

BACA—A. R. Jones Oil & Optg. Co.'s Boice Cattle 1, 22-34s-42w, stand 3800 ft.

ELBERT—Belmont Oil Co., Maher 1, sw 4-6s-59w, prep to res 3720 ft.

EL PASO—Utemore Synd., Cannon 1, ne 10-16s-66w, stand 1100 ft.

JEFFERSON—Ruby Hill O&G Co.'s Braden 1, se 24-4s-59w, sd temp., 3742 ft.

LARIMER—Smith et al's State 2, ne 36-12-70w, dr 280 ft.

LA PLATA—McGarr Pete Co.'s Mesa 1, ne

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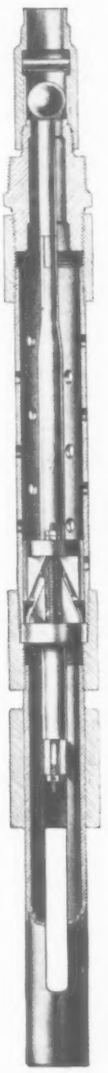

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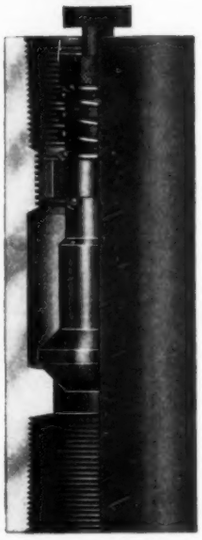

Gulfco Trip Valve
(Johnston Patents)

Makes Bailing Unnecessary

The Gulfco Trip Valve is used to run tubing against pressure by being screwed on the bottom of the tubing and set before the string is lowered in the hole. When the valve is set it makes a perfect seat. After the tubing string is set and the proper hook-up made for completion, the valve is tripped by dropping a small go-devil or bar in tubing, permitting the flow to come through the valve and tubing string. As the tubing string is dry, the use of the Trip Valve makes bailing unnecessary.

Use in Air-Gas Lift Wells

Where wells are flowed through tubing by air or gas, the Trip Valve may be used to do away with the job of building up excessive pressure for kicking the well off. If 150 pounds is the normal pressure required to flow the well, this amount of pressure is all that is required to start the flow through use of the Trip Valve. The valve is screwed on the bottom of the tubing string, which is then lowered in the hole dry. The compressor is started at 150 pounds and the valve simultaneously tripped. As the fluid level rises in the tubing the 150-pound pressure applied around the tubing keeps the fluid moving as though it had been kicked off with excessive pressure.

Use as Cement Dump Bailer

In running cement in the hole by use of a bailer, the Trip Valve is screwed on the bottom of the bailer, in an upside down position. On reaching bottom the weight of the load trips the valve and allows cement to flush out. It is also manufactured in a combination standing valve and tubing drain.

Write for complete information.

GULF COAST MACHINE & SUPPLY COMPANY

BEAUMONT, TEXAS P.O. BOX 999

HOUSTON, TEXAS P.O. BOX 1454

27-33n-12w, more oil show 3300 ft. Klem Pete Corp.'s Olbert 1, se 9-25n-12w, dr 2750 ft. Murchison Oil Co.'s Doescher 1, nw 9-33n-13w, dr 1230 ft.

LINCOLN—Kelley Oil Co.'s State 1, 26-14n-57w, stand 3415 ft.

MOFFAT—Vermillion O&G Synd., 1, se 23-9n-100w, stand 750 ft. Mtn. Fuel Supply's State 2, tract 37-12-100, dr 815 ft. S. H. Keoughan et al's State 1, se 15-4n-101w, fsh 2950 ft.

MONTEZUMA—Haller et al, Haller 3, ne 33-36n-14w, test 710 ft.

MORGAN—Ind. Terr. Illum. Oil Co.'s State 1, ne 16-1n-7w, dr 3620 ft.

PUEBLO—Kuykendall Oil Corp.'s Boescher 1, 7-22-66, dr at 965 ft.

PARK—So. Park Oil Co.'s Milligan 1, se 13-9s-76w, 8¼-inch at 1580 ft, cleaning out. South Park O&G Co.'s Esche 1, ne 5-9s-76w, runn 10-inch.

ROUTT—Gorham et al's Omholt 1, 29-4n-87w, ready to spud.

WELD—Platte Valley Pete Corp.'s Patterson 1, nw 24-6n-61w, prep to dd 6666 ft. Eastman Oil Co.'s Steel 1, ne 14-2n-67w, sd 165 ft.

WASHINGTON—Middlemist Oil Co.'s Middlemist 1, se 14-4s-56w, co 1505 ft.

NEW MEXICO

DE BACA—Matador Oil Co.'s Wood 1, se 6-4n-20e, dr 3052 ft.

LEA—Hobbs High Co.'s State 1, 35-18s-38e, dr 4250 ft.

LUNA—Angelus Oil Mining Assn., se 20-21s-10w, dr 5890 ft.

McKINLEY—J. W. Halsell's Santa Fe 1, 17-18-9w, sd 3255 ft. Wms et al's A. T. S. F. 1, sw 19-18n-8w, dr 1900 ft.

OTERO—Ernest et al's 1, se 20-25s-7e, dr 1100 ft.

QUAY—Silverstein et al's Wetzel 1, 29-12n-33e, stand 85 ft.

RIO ARRIBA—Berringer et al's Hartman 1, ne 8-29n-7w, sd 825 ft. San Juan Pete Co.'s Gov't 1, se 14-30n-7w, sd 250 ft. Governardor Oil Co.'s 1, se 15-29n-7w, dr 615 ft.

SAN JUAN—Dorothy Oil Co.'s Terwilliger 2, 29-30-9w, prep to res 1750 ft. Kutz Canon O&G Co.'s Day 1, se 20-28n-10w, gas at 2018 ft. Childers Dr. & Pr. Co.'s Westwater 2, nw 23-31-16w, sd 2525 ft. Rio Grande Dev. Co.'s Lanier 2, 9-29-11w, stand 1380 ft. Continental Oil Co.'s Rattlesnake 24, 1-29-19w, dr 3610 ft. Murchison Oil Co.'s Angels Peak 4, se 11-28-11, dr 1925 ft. J. B. Witt O&G Co.'s Kutchin 1, 12-7n-7e, sd 1219 ft; Mangum 1, se 33-29n-11w, mvg in.

SAN MIGUEL—Pioneer O&G Co.'s Thunderbird 1, nw 14-15n-16e, wait 2355 ft. Starr Oil Co.'s Adams 1, ne 25-17n-16e, dr 3330 ft. Cibola Pete Co.'s Crown 1, se 9-13n-14e, dr 710 ft. Hershfield Dev. Co.'s Cabra Springs 1, ne 21-12n-22e, wtg for cas 1200 ft.

TORRANCE—Williams et al's Staplin 1, ne 16-8n-10e, stand 1643 ft. J. B. Witt O&G Co.'s Kutchem 1, 12-17s-7e, sd 1219 ft.

VALENCIA—Acme Oil Co.'s N. M. Ariz.-Land Co.'s 1, 26-6-3, stand 4690 ft. Harlan et al's Harlan 1-A, 5-6n-2e, dr 3715 ft.

OKLAHOMA

WOODS COUNTY—T 27n, R 16w, Sec. 33, Sinclair Share 1, c ne sw hfw 7160-7280 ft, td, pb, shot 100 qts 5080-5100 ft, 3500 ft water in hole, pb to 4885 ft to shoot again.

ALFALFA COUNTY—T 27n, R 11w, Sec. 12, Smith Bros., Forbes 1, ne c se nw nw, sd 1420 ft.

KAY COUNTY—T 27n, R 2e, Sec. 9, Mumner et al, Sornick 1, nw c se, bldg rig. T 27n, R 2e, Sec. 17, Blankenship et al, Hansen 1, sw nw nw, shot 10, 20, 40 qts 3587-97 ft, pump 15 bbls.

GRANT COUNTY—T 26n, R 5w, Sec. 25, Bu-Vi-Bar et al, Hurst 1, c sw, show oil and water 5215-18 ft, fsh 5864 ft.

KAY COUNTY — T 26n, R 1w, Sec. 32, Boucher et al, Jefferson 1, ne c sw, running 12-inch 1775 ft.

HARPER COUNTY—T 25n, R 20w, Sec. 12, Empire, Bruce 1, sw c ne ne sw, slight show oil 7161-73 ft, td 7795 ft, run drill pipe.

WOODS COUNTY—T 25n, R 15w, Sec. 10, Bu-Vi-Bar et al, Fee 1, se c sw, td 6104 ft, pulling casing to abn.

GRANT COUNTY—T 25n, R 4w, Sec. 22, Cowden, Vollmer 2, ne c se ne sw, lost tools, sd 5640 ft.

ALFALFA COUNTY—T 24n, R 11w, Sec. 14, J. V. Bailey et al, Acre 1, c sw ne, sd 4660 ft.

GARFIELD COUNTY—T 24n, R 6w, Sec. 9, Pulse & Beamer, White 1, se c nw, dr 5770 ft.

NOBLE COUNTY—T 21n, R 1e, Sec. 12, Barnsdall et al, Minks 1, nw c sw, sd 2470 ft.

BLAINE COUNTY—T 19n, R 10w, Sec. 13, Washoma Pet. Co., Phillips 1, c nw sw, dr 4755 ft.

LOGAN COUNTY—T 18n, R 3w, Sec. 33, Healey & Consolidated Drlg. Co., Quier 1, se c sw, sd 3970 ft. T 17n, R 4w, Sec. 34, Eason Oil Co., Katchor 1, sw c ne sw, sand 4918-42 ft, flowed 680 bbls, averaged 430 bbls. T 17n, R 2w, Sec. 24, Slick, Ramsey & Prairie, Jones 1, c se nw, coring 5306 ft. T 17n, R 1e, Sec. 22, Slick & Prairie, Sims 1, ne c sw se, hfw 5165-5233 ft, td, pb to 5037 ft.

KINGFISHER COUNTY — T 16n, R 7w, Sec. 6, Gault-Brown, Boch 1, c nw se (owdd) dr 6870 ft. T 15n, R 5w, Sec. 23, Prairie & Slick, Wright 1, c nw sw, dr 6110 ft.

OSAGE COUNTY—T 28n, R 7e, Sec. 4, L. G. Stanley et al, 1, se c sw, moving in machine.

PAWNEE COUNTY—T 23n, R 5e, Sec. 15, Cochran et al, McFadden 1, ne c sw, rig. T 22n, R 3e, Sec. 26, Wentz Oil Corp., Lillie 1, se c sw ne, dr 2930 ft. T 22n R 5e, Sec. 2, Sherry et al Milsap 1, se c sw, spud. T 20n, R 5e, Sec. 1, Flynn, Morgan et al, Freeman 1, nw c, dr 3460 ft.

LINCOLN COUNTY—T 13n, R 6e, Sec. 8, Atlantic, Beebe 1, sw c ne sw, lcn

OKFUSKEE COUNTY—T 12n, R 9e, Sec. 3, Tulsa Oil Co. et al, Davis 1, se nw sw, hfw 2765-80 ft, ur 8-inch, co. T 12n, R 9e, Sec. 36, Henry Oil Co., Harjo 1, nw c, Wilcox 4124-57 ft, water, sd.

OKFUSKEE COUNTY—T 12n, R 10e, Sec. 3, Shepperd et al, Sheppard 1, se nw sw, sd 3690 ft.

MUSKOGEE COUNTY—T 11n, R 19e, Sec. 32, Pattison et al, McDuff 1, sw c nw se, shot 130 qts 5660 ft, co 5643 ft. T 8n, R 14e, Sec. 14, C. D. Cannady, Smith 1, nw c rig. T 7n, R 13e, Sec. 18, Apex Oil Co., Walker 1, nw c se 2M gas 975-98 ft, td 1600 ft, sd.

OKLAHOMA COUNTY—T 14n, R 3w, Sec. 32, Mid-Kansas, Messer 1, sw c, shot 90 qts 6690-6760 ft, shot 170 qts flow 425 bbls, co. T 12n, R 4w, Sec. 17, C. F. Cuniff, Trustee, St. Joseph Orphanage 1, sw ne sw se, sd 6700 ft, td.

McCLAIN COUNTY—T 7n, R 2w, Sec. 22, Prairie & Slick, Perkinson 1, sw c nw, dr 4700 ft.

CLEVELAND COUNTY—T 6n, R 1e, Sec. 20, Harris & McNeal, Corbett 1, c sw ne, td 6518 ft, slight show oil and water, sd.

OKFUSKEE COUNTY—T 11n, R 8e, Sec. 11, Carter et al, Keys 1, sw ne sw, dr 3880 ft.

POTTAWATOMIE COUNTY—T 10n, R 4e, Sec. 10, Shell, Baker 1, nw c se, lcn.

SEMINOLE COUNTY—T 10n, R 6e, Sec. 19, Bunte et al, Bruner 1, se c nw, rig.

POTTAWATOMIE COUNTY—T 9n, R 4e, Sec. 14, C. F. McGee et al, Eckridge 1, se c nw, lcn.

HUGHES COUNTY—T 9n, R 12e, Sec. 29, Canady, Kanard 1, nw c sw, sand 4468-4506 ft, hfw, pb to 3540 ft, sd.

POTTAWATOMIE COUNTY—T 7n, R 3e, Sec. 19, Droppleman & Burke, Fundis 1, se c ne, dr 4070 ft. T 6n, R 5e, Sec. 5, Robinson & Hicks, Crouch 1, nw c sw, dr 3400 ft.

SEMINOLE COUNTY—T 6n, R 7e, Sec. 9, Neal & Milton, Thomas 1, nw c ne sw, hfw 3032-35 ft, sd.

HUGHES COUNTY—T 6n, R 9e, Sec. 20, Gilcrease Oil Co., Deere 1, ne c sw, spud.

ROGER MILLS COUNTY—T 13n, R 21w, Sec. 10, Richfield O&R, Hiatt 1, se c, rig. T 12n, R 24w, Sec. 23, Bucy & Stone, Williams 1, c sw, sd 2243 ft.

CANADIAN COUNTY—T 10n, R 6w, Sec. 1, J. V. Bailey, Robinson 1, c ne nw, sd 150 ft.

CADDO COUNTY—T 9n, R 13w, Sec. 18, J. J. Wright & Shell, Boys 1, ne c, lcn.

GREER COUNTY—T 7n, R 22w, Sec. 1, Roy Good et al, Cliffel 1, nw c, sd 1265 ft. T 7n, R 21w, Sec. 23, H. A. French et al, Murphy 1, sw nw se, sdtr tools, 375 ft.

CADDO COUNTY—T 6n, R 11w, Sec. 24,

Simms & J. R. Wrightsman, Cobza 1, sw c nw, dr 3446 ft.

HARMON COUNTY—T 4n, R 24w, Sec. 17, Harmon-Tex Oil Co., Headley 1, ne c, 2593 ft, td, sd.

COMANCHE COUNTY—T 3n, R 9w, Sec. 3, Okla. Nat. Gas Co., Doebel 1, ne c sw sw sw, sd 1450 ft.

HUGHES COUNTY—T 5n, R 10e, Sec. 30, Erwin et al, Jones 1, se c ne, sd for water 4275 ft. T 5n, R 11e, Sec. 15, J. J. Wright 1, Roberts 1, se c sw, sd 1645 ft.

COAL COUNTY — T 3n, R 9e, Sec. 26, Blackwell, Gumm 1, nw c, dr 4575 ft.

ATOKA COUNTY—T 3s, R 10e, Sec. 18, Brookshire et al, Guinn 1, nw c, dr 400 ft, show gas 360-72 ft.

CARTER COUNTY—T 4s, R 2e, Sec. 32, Texas-Okla. Drlg. Co., Anderson 1, c se ne se, dr by pipe 2400 ft, td 2580 ft.

LOVE COUNTY — T 6s, R 3w, Sec. 20, Harry Hobbs, Steele 1, sw c ne ne sw, sd 3130 ft.

BRYAN COUNTY—T 6s, R 7e, Sec. 14, W. A. Johnson, Ussery 1, se c, sd 325 ft. T 6s, R 9e, Sec. 35, C. P. Bush, Commerce Trust Co. 1, ne c, sd 600 ft. T 7s, R 10e, Sec. 8, Bryan Oil Co., Childs 1, ne c se sw, sd 475 ft.

KANSAS

STEVENS COUNTY — Liberal Gas, Unknown 1, c n½ ne, 4-35-34w, 12-inch 500 ft, sd 2600 ft.

SUMNER COUNTY — Davidson et al, Strickland 1, sw se 12-34-1w, rig.

MORTON COUNTY — Hydraulic Oil Co., State land 1, nw se, 22-34-43w, dr 3250 ft.

HARPER COUNTY—Atkinson et al, Misak 1, se c 25-32-6w, 8-inch 4635 ft, rust.

SUMNER COUNTY—Disney et al, Foy 1, c e½ se 14-34-1w, rig.

STEVENS COUNTY—Western Prod., Fee 4, c ne 6-33-36w, dr 2618 ft.

SUMNER COUNTY—Magnolia, Shriner 1, nw sw, 9-33-2e, base L. 3645 ft, dr 3660 ft.

STEVENS COUNTY—McNabb & Mid-Kansas, Rinehart 1, c ne, 23-32-39w, rig. Argus Gas Co., Ponder 2, c nw, 10-32-38w, dr 2401 ft. Western Prod. Co., Ponder 1, c ne, 10-32-38w, 8-inch 2495 ft, dr 2695 ft.

COWLEY COUNTY—Tom Fine, Boyd 1, nw ne, 32-32-4e, 12-inch 1265 ft, sd 2650 ft. Roth & Faurot, Reidy 1, c sw nw ne, 8-32-4e, td 912 ft, fsh blr.

HARPER COUNTY—Beeker et al, Bear 1, c ne, 21-21-6w, td 1830 ft, sd.

KIOWA COUNTY—Phillips-Prairie, Bean 1, ne se 10-30-17w, 3950-55 ft, hfw 4115 ft, dr 4657 ft.

BARBER COUNTY—Allison & Fitzwilliams Kumberg 1, c se sw se, 2-30-12w, 6-inch 4023 ft, dr 4123 ft.

GRANT COUNTY—McKenna et al, Sullivan 1, ne c 12-29-28w, dr 2125 ft.

SEDGWICK COUNTY—Buck et al, McNanaman 1, c ne nw nw 2-20-1e, rig.

ELK COUNTY—Alladin, Donnell 1, ne se sw, 26-29-10e, Wilcox 2386-2411 ft, so, sd.

KIOWA COUNTY—McKenna et al, Ralston 1, c ne, 14-28-20e, ru sd.

SEDGWICK COUNTY—Branson et al, Kincaid 1, se nw nw 4-29-1e, spd and sd.

BUTLER COUNTY—Farrell et al, Sutter 1, nw c 18-28-7e, dr 1100 ft.

KINGMAN COUNTY—Skelly, Miles 1, ne c, 30-27-10w, 2005-20 ft, est 6M gas, sd.

SEDGWICK COUNTY—Streeter & Stearns, Tobin 1, c sw se ne, 5-27-2e, dr 640 ft.

GREENWOOD COUNTY—F. Konkay et al, Rock 1, nw ne ne 7-27-12e, td 1836 ft, sd.

PRATT COUNTY—Wilcox, Unknown 1, sw nw 7-26-15w, td 4395 ft, hfw, csg trbl.

FORD COUNTY—Swain et al, Kenthorn 1, c nw, 21-25-24w, 6-inch 3775 ft, dr 4300 ft.

RENO COUNTY—Shell et al, Popp 1, nw c 11-25-5w, dr 3515 ft, 1500 wih.

GREENWOOD COUNTY — Staats et al, Swan 1, ne nw 3-25-12e, spd and sd.

BUTLER COUNTY—Empire & McCullogh, Lilley 1, c sw nw nw, 23-23-5e, 10-inch 1200 ft, 1640-75 ft, hfw, dr 2175 ft.

RENO COUNTY—Alco Royalty Co., Kinney 1, se c 16-22-7w, td 3475 ft, dr by blr. Braden et al, Theisen 1, se ne 6-22-4w, 8-inch 2914 ft, sd 3380 ft.

MARION COUNTY—Maidwell, La Master 1, nw c, 31-22-4e, ru.

COFFEY COUNTY—Hegberg et al, Kroft 1, se sw se, 30-22-14e, 10-inch 818 ft. McGreg-

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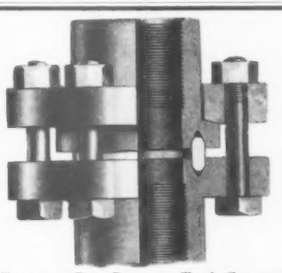

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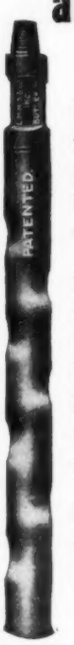

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gor et al, Wood 1, c ne nw sw 20-22-15e, sd 650 ft. Roberts et al, Hay 1, sw se nw 32-22-15e, sd 1125 ft.

RICE COUNTY—United Pet. Co., Wellman 1, ne c 29-21-9w, td 3095 ft, ur 6-inch.

PAWNEE COUNTY — Phillips, Cuthberson 1, c ne 27-20-18w, td 2785 ft, fsh tools.

BARTON COUNTY—McCool et al, Tsern 1, c sw se ne 12-20-11w, 12-inch 900 ft, sd 1600 ft.

RICE COUNTY—Skelton Oil Ott 1, c se se 16-19-14w, spd. Muth Brothers, Beyers 1, ne nw 21-19-9w, dr 600 ft.

McPHERSON COUNTY — United Pet. & Shell, Kaegi 1, ne c 20-19-1w, lcn. Henderson & Holden, Sommerfield 1, c ne sw 23-19-1w, spd.

MARION COUNTY—Marshall et al, Higgens 1, ne c 33-19-5e, rig.

LYON COUNTY—Griffith et al, King 1, nw c 8-19-10w, 12-inch 910 ft sd.

RUSH COUNTY—Syndicate Oil, Tannen 1, c sw 11-19-16w, dr 400 ft.

RICE COUNTY—Jasper & Beschka, Cupp 1, sw ne 22-18-9w, 8-inch 2830 ft, dr 2920 ft.

McPHERSON COUNTY—Alladin Pet., Larson 1, c nw, 22-18-4w, rig.

MARION COUNTY—Alladin Pet., Rudolph 1, nw ne 36-18-3e, spd.

McPHERSON COUNTY—Slick et al, Sandell 1, c sw sw 35-17-3w, spd and sd.

MARION COUNTY—Alladin Pet., Koch 1, nw ne, 36-17-3e, rig.

MORRIS COUNTY—Urchell et al, Bersuch 1, c nw se nw 10-17-7e, ru.

RUSH COUNTY—Prairie, Leiker 1, c nw sw sw 5-16-13w, 3337-52 ft, oil, exhausted on swab and hfw, dr 3676 ft.

ELLSWORTH COUNTY—Alladin & Marland, Barecky 1, c nw, 3-16-10w, dr 2000 ft. Alladin et al, Stoddenberg 1, c sw, 22-15-10w, ru and sd.

MORRIS COUNTY—Urschell et al, Scott 1, ne sw 6-16-6e, sd 2420 ft. Pratt et al, Whiting 1A, nw sw sw 24-16-6e, T. lime 2060 ft, sd 2600 ft. Hankenson et al, Sessnum 1, sw se 24-16-9e, rig.

RUSSELL COUNTY—Empire, Sherwood 1, c se nw nw 21-14-13w, 8-inch 2393 ft, dr 2785 ft.

ELLSWORTH COUNTY — Milton et al, Kester 1, se ne 6-14-9w, sd 330 ft.

SALINE COUNTY—Sampson et al, Suderdorf 1, ne se 30-14-2w, rog.

OSAGE COUNTY—Riggs-Smith, Wood 1, c se nw, 31-14-15e, sd 410 ft.

DOUGLAS COUNTY — Steinbushel et al, Unknown 1, sw ne nw 34-14-21e, td 1110 ft, sd.

GOVE COUNTY—Valerius et al, Todd 1, nw c 24-13-27w, 6-inch 4174 ft, 4460-65 ft, 800 ft wih, fsh blr.

RUSSELL COUNTY — Austin Drlg. Co., Rockefeller 1, se c 6-13-12w, sd 2740 ft.

SALINE COUNTY—Twin Mounds Oil Co., Weis 1, c w½ ne nw, 30-13-4w, td 2500 ft, sd.

DICKINSON COUNTY—Severs et al, Livingood 1, ne sw 13-13-2e, sd 2777 ft.

GOVE COUNTY — Johnson & Atlantic, Wright 1, c se ne 11-12-27w, 13-inch 1790 ft, dr 2165 ft.

PAWNEE COUNTY—Central Commercial, Helms 1, se ne 2-12-20w, td 3916 ft, co.

RUSSELL COUNTY—Gilbreath et al, Bratton 1, c ne, 33-11-13w, sd 2155 ft.

ROOKS COUNTY — Streeter & Stearns, Conger 1, c se nw ne 16-10-16w, td 3070 ft, ur 8-inch.

CLAY COUNTY — Nebraska Oil Tivier 1, sw c 19-8-3e, td 2390 ft, caving.

MARSHALL COUNTY—Swicker & Simcox, Remple 1, c n½ nw 22-4-9e, dr 1295 ft.

WASHINGTON COUNTY—Simcox, Penwell 1, nw se ne 16-3-3e, dr 1570 ft.

RAWLINS COUNTY—Danciger et al, Unknown 1, sw c 3-2-35w, dr 1000 ft.

MARSHALL COUNTY—Balzier et al, Runkel 1, se nw 13-2-6e, spd and sd.

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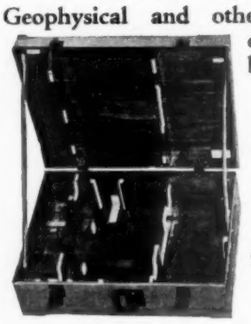

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ART TABLE CO.
1203 W. Webster Street,
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JESSE R. STONE
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Patents, Infringement Litigation, Trade Marks
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Andrews Streetman Logue & Mobley
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LETTERS

"In your issue of October 24 you say the daily August requirement of crude oil for the last quarter of 1930 is 2,537,-082 barrels and the daily production now is about 2,370,750 barrels. Now, if this is correct it would take about 166,000 barrels out of storage. How do the imports figure in this, are they to be added to the daily production? I do think we need the oil tariff more than ever.

"Do you know how much oil there is in storage? I have a paper report that gives all oil stocks on hand of 678,508,000 barrels. Does this include gasoline stocks and all?

"Please excuse me from asking so many questions. When will the oil situation change again? I asked the Prairie Oil Company's local man and he said there will be a change by 1932. I hope the oil market will improve by next April, maybe June. I want to start a well some time after New Years."

M. F. SHUPE,

Wichita, Kansas.

The figure of daily oil requirements carried in the market section every week is an estimate prepared by our staff economist but it fairly accurately reflects the supply and demand situation. If you will check the September Bureau of Mines figures on crude stocks, you will note that there was a decrease during that month of 4,808,000 barrels. The difference you point out of 166,000 barrels a day multiplied by 30 days shows an indicated decrease in stocks of 4,980,000 barrels; not very far off considering that it is an estimate based on predetermined gasoline requirements of the United States. Imports are considered in both demand for crude as well as the economic production limit prescribed.

Crude oil in storage on October 1, according to the Bureau of Mines aggregated 521,204,-000 barrels; east of California 376,975,000 barrels and in California 144,229,000 barrels. Total stocks of all oils, including crude and refined products, amounted to 678,508,000 barrels.

It is difficult to say when the market situation will change, but we are of the opinion that continued proration and curtailment will effect a decided improvement in the very near future.—EDITOR.

"Up to about a month ago I was well satisfied with THE OIL WEEKLY and when I renewed my subscription I sent in the names of a few of my friends. However, about this time you began omitting the 'Permit Section' and when I sent in my subscription I asked what was the matter with the 'Permit Section,' as you will note if you look up the blank form I sent along with the subscription.

"I have been watching for this 'Permit

General Land Office Maps of all Texas Counties

PHOTOSTATS

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HOUSTON, TEXAS

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ASSURES . . . . .

Building Economy

This means economy for every branch of the Oil Industry, because there is a City Ready-Cut House Co. building made especially for each.

Economies in original cost due to savings in manufacture; Economies in erection due to ready-cut units easily put up by your own crew; Economies in maintenance due to quality of materials; high salvage value and ready portability; are important factors which strongly recommend the purchase of City Ready-Cut House Co. Oil Industry Houses and Buildings.

Write for plans and specifications

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HOUSTON TEXAS U·S·A·

AMERICAN

AURORA, ILL.

The American Well Works manufactures a complete line of oil well pumping units. They are made in a wide variety of sizes permitting a length of stroke of from twelve to fifty inches. All gears are enclosed and run in a bath of oil. Used throughout the oil fields of the world. Catalogs and engineering data upon request.

C. S. CARTER, *Sales Representative*
711 Mid-Continent Bldg., Tulsa, Oklahoma
WM. PIERCE, *Sales Representative*
701 Elm St., Dallas, Texas

THE AMERICAN WELL WORKS

General Offices AURORA, ILLINOIS and Factory

BRONZE TO BRONZE
Is the Reason

DART UNIONS
Give Service
Try them
E. M. Dart Mfg. Company
PROVIDENCE, R. I.
The Fairbanks Company
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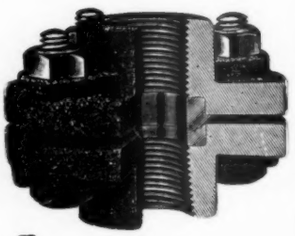

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QUALITY IS ALWAYS ECONOMY
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"Fortify for Fire Fighting"

Pyrene Manufacturing Company
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Section' in every issue since it was first discontinued and I am sure many others have also, in fact in the issue of September 19 I notice that others have been looking for it, then down in small type the reason for its non-appearance is set forth, and in my opinion it is a very poor reason, as the 'Permit Section' is no doubt of great interest to a majority of your readers, whereas the few readers that may be interested in the 'Technical and Engineering Stuff' you talk about needing the space for, can readily find the very best of books on these subjects at any good library or publishing company.

"Let's see the 'Permit Section' back again and more news of the United States, especially Texas, and less Technical, Engineering and Foreign stuff, and in my opinion you would be pleasing a majority of your readers."

W. T. REITMEYER,
Independent Operator.
Hitchcock, Texas.

Sufficient other readers are also interested in permits for new wells that that department has been reinstated. However, we will have to ask Mr. Reitmeyer to bear with us on technical subjects and foreign news for the benefit of those thousands of readers who do not have access to the library at Hitchcock.—EDITOR.

"I am an enthusiastic reader of THE OIL WEEKLY, and think it one of the best magazines published.

"I am very anxious to get some information in regard to the oil industry in Java and Sumatra, and I thought perhaps you might have some data on this subject or could inform me where I could get this information.

"I am particularly interested to know which of the Standard Oil Companies operate in this part of the world and anything else that you have regarding living conditions on these islands."

DUDLEY HUGHES,
2846 Seevers Street,
Dallas, Texas.

Our records fail to reveal whether or not the Standard Oil Company is operating in the Dutch East Indies. If Standard Oil Company does have holdings in Java, Sumatra, etc., it is very likely that they are held under the foreign subsidiaries of the Standard Oil Company of New Jersey.

As to living conditions, etc., in the Dutch East Indies, we refer you to an article in the June 13, 1930, issue of THE OIL WEEKLY, entitled "Bull Dog Tenacity Has Won East Indies Petroleum Battle," and an article in the July 19, 1930, issue entitled "Borneo's Oil Development Brought Civilization to the Jungle." Our files have been depleted of these two issues, but you will probably have no trouble locating them in the Dallas Library.—EDITOR.

"On the back of cover of your October 31 number is a picture of the Fesemyer Drilling Company, a drilling crew and I am wondering if it would be possible to trace back the name and address of the man on the extreme left, next to the driller. My reason for asking this favor is that this person has a striking resemblance to a brother of mine whom I have lost tract of for the past seven years and am very anxious to communicate with him."

FERNEST TAYLOR,
Rayne, Louisiana.

Can the Hughes Tool Company answer reader Taylor's request?—EDITOR.

SKILLED SUPERVISION GUARANTEES THE QUALITY OF GULF PRODUCTS

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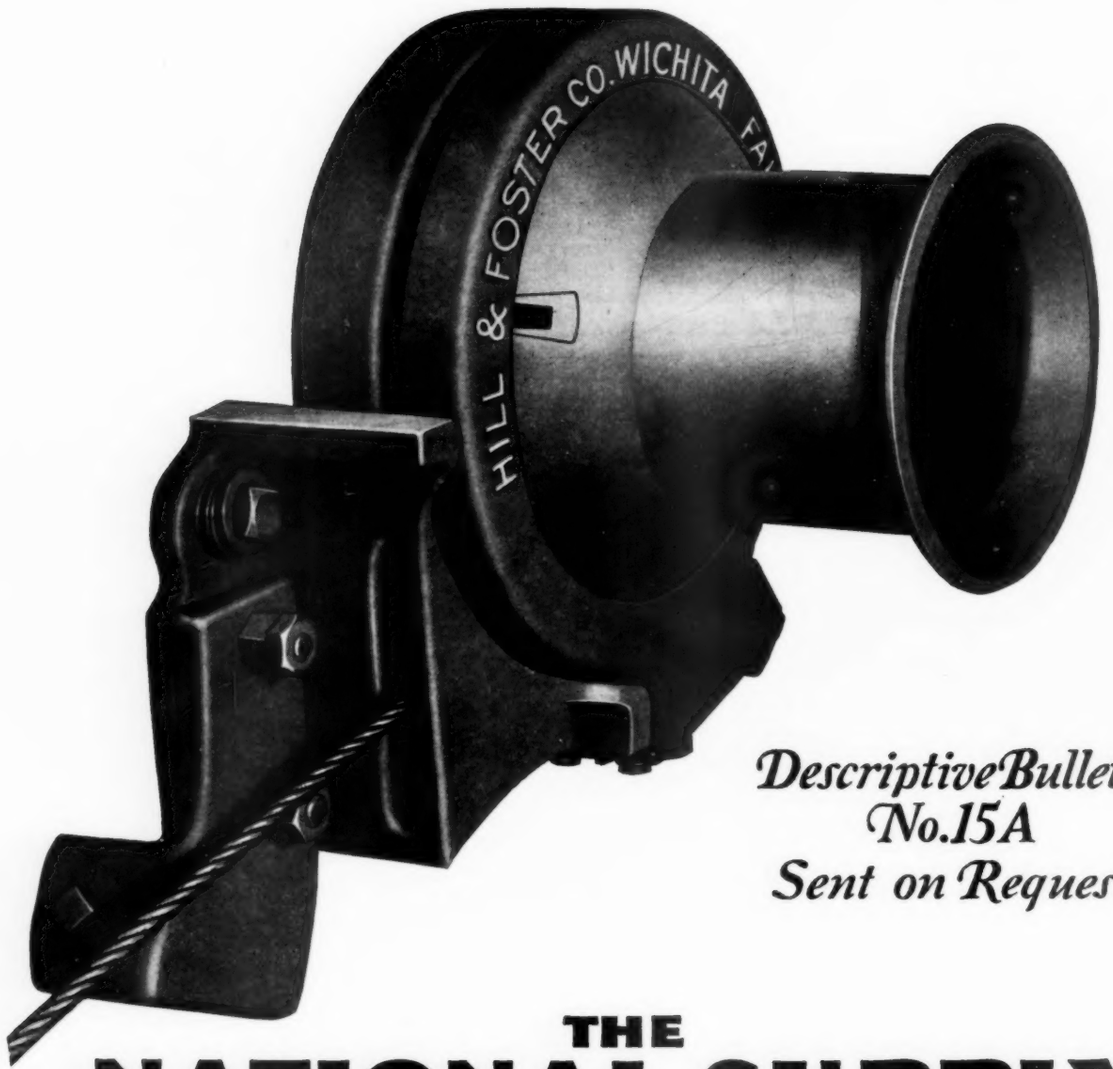
HILL & FOSTER AUTOMATIC CATHEAD



Descriptive Bulletin No. 15A Sent on Request

THE NATIONAL SUPPLY COMPANIES

New Equipment for the Field

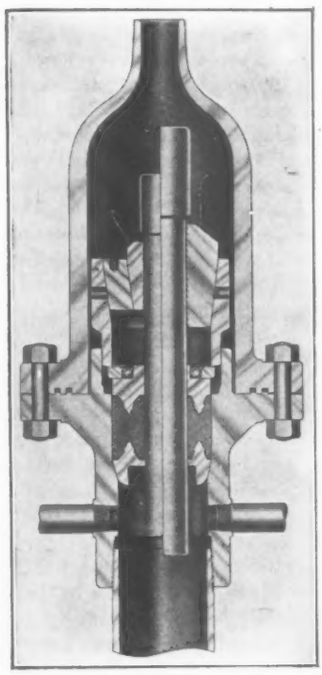
Machinery - Tools - Catalogs - Books

Combination Blowout Preventer and Tubing Head

BAASH-ROSS TOOL COMPANY

Baash-Ross Tool Company, Los Angeles, is now marketing a new combination blowout preventer and tubing head designed to meet the growing pressures encountered.

The new appliance consists essentially of a cast steel body, an improved Baash-Ross blowout preventer assembly, and a cast steel bonnet, which are tested to 5000 pounds pressure. The body is provided with a spider with which may be used slips for either drill pipe or tubing. It offers three different ways of sealing off pressure.



The packing assembly consists of top and bottom split steel rings, between which is dovetailed a rubber packing ring. The top ring has a set of latch rings that automatically catch below the lower edge of a spider which is screwed into the main body to prevent the assembly from coming out. By screwing down the spider tightly upon the ring the rubber remains expanded, packing off the well in this manner and by slightly backing off the spider ring the drill pipe or tubing can be raised or lowered the full length of the joint.

In operation the cast steel body is screwed to the outer casing. Drilling may proceed through the body, and in the event of danger of a blowout occurring the blowout preventer assembly is placed around the drill pipe and dropped into the body where it automatically locks. The drill pipe coupling or tool joint is then lowered until it rests on the upper ring of the assembly, which expands the rubber to seal off the gas pressure.

The assembly is so designed that the drill pipe may be picked up until the tool joint or coupling, below the blowout preventer assembly, forces the packing rubber to expand.

If the operator desires to allow the well to flow through the drill pipe, slips may be inserted between the pipe and the spider to hold the pipe. Then the cast steel bonnet is bolted to the main body. Some operators assemble the bonnet on the Christmas tree at first, and then it is assembled with the body.

In the event that tubing is run in, a bushing is placed on the inside of the spider to accommodate tubing slips.

The main body is regularly equipped with two two-inch discharge openings, and the bonnet with a four-inch line pipe thread.

Crown Block Bearing

CARTHAGE FOUNDRY & MACHINE COMPANY

Carthage Foundry & Machine Company, Carthage, Missouri, has the new Carthage grease sealed crown block bearing completely described in illustrated folders recently issued, and will forward copies of this literature upon request. This late design of crown block bearings is illustrated here.

This bearing embodies a unique method of retaining the lubricant and excluding dirt and grit. The seal is adjustable automatically. The upper half of the shaft is in direct contact with the grease chamber at all times, to insure the maintainance of a grease film on the bearing surface.

The design, where lubrication is involved, is directed at time saving, a single filling of lubricant usually lasts throughout the drilling period.

The bearing metal is a special bronze which is suitable for high bearing pressures such as encountered in this service. This bushing consists of a lower half which may be reversed in case uneven wear takes place. A collar on the upper half of the bearing holds the shaft in position.

By use of a specially designed clamp this bearing may be adjusted either lengthwise or sidewise on the I-beam, making possible the securing of proper alignment of the bearing with ease.

More complete details on this new bearing is available upon request.

NEW EQUIPMENT FOR THE FIELD

Spudder and Drilling Rig

FORT WORTH WELL MACHINERY & SUPPLY COMPANY

Due to certain errors in the text of description of items of new equipment featured by the Fort Worth Well Machinery & Supply Company at the exposition at Tulsa, the following is reproduced from page 111 of our issue of October 10, with correction and apology:

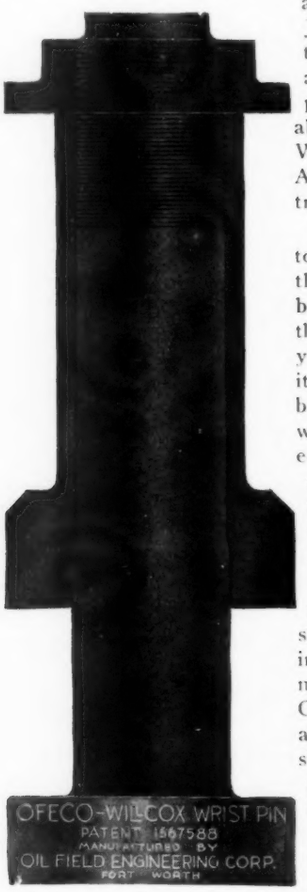
Fort Worth Spudder

Fort Worth Well Machinery & Supply Company, Fort Worth, is showing at the exposition this year one of its caterpillar type Super "H" Fort Worth Spudders and its latest development in its line of drilling rigs, the new Super "J." The Super "J" embodies the features of a chain driven sand reel which is operated by a Herdman Fort Worth Spudder clutch and spools more than 8000 feet of 9/16-inch sand line. The shafts on this sand reel are mounted on SKF ball bearings and is also equipped with two asbestos lined brakes, one at either end, the bands being fastened to an evener precluding any possibility of the load being thrown onto one brake. Another feature of the drilling rig is the steel pitmans which are attached to the wrist pins with bronze bearings and are lubricated with the Alemite system of lubrication through the wrist pins. The shock absorber embodies the feature which permits the shock absorber sheave to travel horizontally across the machine with the line, thus encouraging even spooling of the line on the drums. The main sills have also been increased in size. The Super "H" Spudder embodies caterpillar crawler which makes it possible to transport this machine over the soft and sandy earth of the oil fields with a minimum of horsepower requirements.

Wrist Pin

OIL FIELD ENGINEERING COMPANY

Oil Field Engineering Company, Fort Worth, Texas, has recently taken over the patents on the Wilcox wrist pin from Oscar Cox and O. C. Willis of Cotton Valley, Louisiana. This company, of which Jon R. Long is president, has the exclusive manufacturing and distribution rights on the pin, and started production about a month ago at its Fort Worth factory, Rio Grande Avenue and Frisco Railroad tracks.



The Wilcox wrist pin, prior to recent improvements by the new manufacturers, has been in service in the fields of the Mid-Continent for several years. Now OFECO made, it is turned out on a precision basis from Chrome-nickel steel which is electrically heat treated to develop the maximum physical properties, and is tested both for hardness and strength before leaving the shops.

This wrist pin has three parts, the pin, the bearing sleeve and the Pitman retaining lock nut. These parts are machined from forgings of Chrome-nickel steel mentioned above. The OFECO pins, sleeves and retaining nuts are precision machined to provide interchangeability of parts All pins are furnished with left hand threads to give a constant tightening action from the motion of the rig. For pumping units operated in reverse motion, right hand threads are furnished.

For installation, the pin is inserted through the crank from the rear. The bearing sleeve is run by hand over the pin and set up against the crank with a sledge hammer. The Pitman is placed on bearings and the retaining nut screwed on the end of the pin.

An outstanding feature of the improved pin is a large fillet which has been turned on the end of the pin, allowing the pin to be driven in or out of a tight crank hole without damaging the threads.

The OFECO pin is manufactured in all standard and A. P. I. rig iron sizes, portable drilling sizes, and for all types and sizes of pumping units.

The manufacturers will furnish literature complete describing this improved pin upon request to the Fort Worth headquarters.

The State Geological Survey of Arkansas announces the publication of Bulletin 3, "The Geology of the Arkansas Paleozoic Area with Especial Reference to Oil and Gas Possibilities," by Dr. Carey Croneis. The bulletin contains 477 pages, 45 plates, and 30 figures, showing well logs, production statistics, and structural conditions.

Manufacturers and Supply Dealers Notes

General Electric Company, Schenectady, New York, has issued a four-page loose-leaf bulletin on the low-speed synchronous motors, types TS and QS for direct connection to reciprocating compressors. Standard ratings on this "6000" series, large sizes, with welded steel-plate frames, range from 20 horsepower to 700 horsepower, 1.0 P-f, 60 cycles at speeds between 72 and 450 r.p.m. A copy of this illustrated bulletin for inclosing in a loose-leaf folder will be forwarded upon request.

General Electric Company has also recently issued a 40-page booklet on arc welding. This booklet is profusely illustrated, showing numerous electric welding jobs, including pipe line, tank, blower casings, manifolds, truck tanks, furnaces and other jobs.

Another interesting piece of literature of General Electric of recent date is a pocket-size pamphlet devoted to covering G-E welding electrodes. Eight different types of G-E welding electrodes are shown and described followed by a section on G-E electric welding accessories and electric welding equipment. The company will forward a copy of this pamphlet upon request to the Schenectady headquarters, or to a district office of the industrial division of the company.

The Foxboro Company, Foxboro, Massachusetts, announces the publication of Bulletin No. 168 which is devoted to covering in description and illustrations recording gauges and steel springs. The booklet stresses the fact that the company's new gauges have all-steel, all-welded movements. The booklet is 24 pages and is cut for insertion in a loose-leaf folder. A complete lay-out on recording gauge specifications is carried in tabular form. This bulletin will be gladly forwarded by the Foxboro Company upon application to its home office, given above.

The Foxboro Company has also recently issued a 38-page bulletin on Foxboro V-Port Controlled valves. The various characteristics peculiar to Foxboro design in valve manufacture are explained in this bulletin in illustrated form. An interesting feature of the valve bulletin is the publication of a number of performance charts on these valves. This bulletin also is available by writing the company.

American Welding Company, Inc., 30 Church Street, New York City, has issued bulletin Number 2002, giving details of construction and other data on Rowland forge welded containers for shipment of liquefied petroleum gases, and bulletin Number 3003, giving details of construction and other data on forge welded storage tanks for propane, butane and other gases and liquids contained under pressure.

Either or both of these bulletins will be forwarded to interested persons upon request to the above address.

Fulton Iron Works Company, St. Louis, announces a new bulletin covering the Fulton type RR Diesel engine. This is a neatly bound booklet in two colors with the story of this engine graphically told in photographic and mechanical drawing illustrations. Individual working parts are taken up separately and described in detail, with the parts shown in pictures.

A copy of this bulletin is available upon request to the St. Louis or Springfield, Ohio, factories.

Babcock & Wilcox Company, New York City, announces a new bulletin which discusses a new method of welding. This method, as claimed by the company, eliminates the necessity for long training or great skill on the part of the operator and produces welds equal to or better than the work metal in tensile strength, shock resistance, ductibility and the ability to withstand repeated stresses. These characteristics are illustrated by photographs and descriptions of test specimens, chemical analysis, and photomicrographic studies. A chapter of this bulletin is devoted to the non-destructive tests employed by the company to prove the efficiency of the welds in finished products. Photographs of X-Ray studies are shown and a new electro magnetic tester is described which hunts out defects in welds. This bulletin may be secured by writing to the company at New York City.

Petroleum Equipment Company and Oil Field Engineering Company of Fort Worth are placing stocks in Los Angeles in order to better serve the California district, Jon R. Long, general manager of both companies, announces. G. D. Hall will serve as California representative, maintaining offices and warehouse stocks at 1506 Santa Fe Avenue. Hall was formerly with the Guiberson Corporation at Dallas.

Michigan Valve & Foundry Company, Detroit, has issued a bulletin on the screw lift valve. Diagrammatical illustrations of the valves and plugs with all dimensions and operating functions of each particular part are given. Two sizes, standard 150 pounds working pressure, and extra heavy 250 pounds working pressure are the plug valves featured in this bulletin. The strength of the moving parts of the "screw-lift" mechanism is made to preclude any danger of breakage under severe field service. The plug, when raised, is held just out of contact with its seat regardless of operating pressure. The clearance between plug and seat in this position is just sufficient to permit rotating the plug, but is not enough to permit the entrance of foreign matter of scale between the contact surfaces. The valve is furnished either with or without lubrication of the plug, depending on the type of service for which it is to be used. These valves are all made from Meehanite Metal, which is claimed to have two or three times the tensile strength of gray iron at all temperatures and more than six times its impact strength. This metal is also very resistant to corrosive forces. This bulletin will be sent upon request to the office of the Michigan Valve & Foundry Company, 412 Spruce Street, Columbus, Ohio.

Blackor Company, Los Angeles, effective November 1, will maintain headquarters at Tulsa and Houston. A. N. Muhr will be in charge of the office at Tulsa as representative for Oklahoma and North Texas and Ross Ledford will be located at Houston as representative for South Texas. Both men have had many years of experience in oil field work.

Merco Nordstrom Valve Company has opened an office in Charleston, West Virginia, at 304 Capitol Street, under the management of H. D. Ruos.

SQUEAKS FROM THE BULL WHEEL

Satan (to new arrival)—Hey, you act as though you owned this place.

Newcomer—I do. My wife gave it to me.

Weather man—Put down rain for a certainty this afternoon.

Assistant—Are you positive, sir?

Weather Man—Yes, indeed. I've lost my umbrella, I'm planning to play golf, and my wife's giving a lawn party.

Mother—Horrors! While sister was sleeping the baby licked all the paint—

Father—What, off the chair?

Mother—No—off sister.

"So you took that pippin home from the movie last night."

"Yeah."

"How far does she live from the theatre?"

"Oh, three sado fountains and a candy store."

Judge—You admit you drove over this man with a loaded truck?

Driver—Yes, your honor.

Judge—And what have you to say in your defense?

Driver—I didn't know it was loaded.

Mrs. Newlywed—I cook and bake for you, and what do I get? Nothing.

Mr. Newlywed—You're lucky. I get indigestion.

Why the rope around the finger?

My wife put it there so I'd remember to mail a letter.

Did you mail it?

No; she forgot to give it to me.

"Is it very far to the next town?"

"Well, it seems further'n it is, but it ain't."

"You can't stop here," the traffic cop yelled to the fellow whose car had stalled at the street intersection.

"You don't know this car," replied the owner with a sad smile.

The witness was certainly no chicken, and the young barrister thought it would be to his advantage to get her rattled.

"And now, madam," he said, "I must ask a personal question. How old are you?"

"Young man," she replied, "it isn't more than an hour since the Judge, there, objected to hearsay evidence. And I don't remember being born; all I know of it is hearsay."

Teacher (to new scholar)—How does it happen that your name is Allen and your mother's name is Brown?

Little Lad (after a moment's thought) Well, you see, it's this way; she married again and I didn't.

I believe a man should give his wife plenty of rope.

That's what I did with mine, and she skipped.

"Do you give a guarantee with this hair restorer?"

"Guarantee, sir? Why, we give a comb!"

"To what do you owe your extraordinary success as a house-to-house salesman?"

"To the first five words I utter when a woman opens the door—'Miss, is your mother in?'"

"Are you sure this cleaner will really take out the dirt?"

"Will it? Say, lady, yesterday I rubbed some of it on a copy of Scandalous Stories and when I got through I had the Sunday School Gazette!"

"Why is he so sad?"

"Didn't you know he had gone bankrupt?"

"Yes, but I didn't know he had lost money over it."

Yes, Johnny, the doctor brought twins.

Gee, that's what we get for having a specialist.

She (rapturously)—The man I marry will be strong. A silent man! A man with grit!

He (disgustedly)—What you want is a deaf and dumb ashman.

"It seems that a printer somewhere down in Texas got slightly peeved at a letter from a doctor who wanted bids on several thousand letterheads and statements, different sizes, different grades of paper and printed in various colors, with the request that the forms be kept standing for possible reprint orders," ran a story in Forbes Magazine.

So, Mr. Printer diagnosed the case carefully and answered something in this manner: 'Am in the market for bids on one operation for appendicitis—one, two and five-inch incision, with and without nurse. If appendix is found to be sound, want quotations to include putting same back and canceling order. If removed, successful bidder is expected to hold incision open for about 60 days, as I expect to be in the market for an operation for gallstones at that time and want to save the cost of cutting."

FIRST CHOICE

in the Race to Reach Pay Sand

In the ranks of experienced and field-seasoned drillers the APPLEMAN BIT enjoys the reputation of being one of the fastest drilling and most economical bits to be found anywhere. When there's a race to reach pay sand the APPLEMAN BIT, because of its unusual speed, proves a weighty factor in the outcome. Take advantage of the speed features this bit offers you and mounting profits will back the wisdom in your choice.

SEE OUR DESCRIPTIONS IN THE COMPOSITE CATALOG

B.K. APPLEMAN
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TYLER

Our complete line enables us to supply boiler tubes for every kind and type of service. A warehouse stock in your vicinity will assure immediate delivery.

Boiler Tubes made of

COP-R-LOY
ARMCO INGOT IRON
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Write us today regarding your requirements—standard or special.

THE TYLER TUBE & PIPE CO.
Washington, Pa.

Warehouse Stocks at
Harrisburg Pipe and Pipe Bending Co., Houston, Texas
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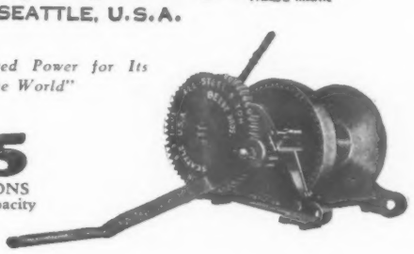
Lukens Steel Company, New Orleans, La.

BOILER TUBES

Beebe Bros
ALL STEEL HAND HOIST
TRADE MARK
SEATTLE, U.S.A.

"The Strongest Geared Power for Its Weight in the World"



5 TONS Capacity

Weight 110 lbs.

Capacity FIVE TON STRAIGHT LINE

Size 16x17x13" High

Two Speeds 4 to 1 24 to 1

POSITIVE INTERNAL BRAKE

Construction Eight Pieces Electrical Steel Without Keys or Setscrews

A Friend in Need to Every Oilman

The great utility, power and dependability of the Beebe All Steel Hand Hoist is bringing more and more producers to use it for emergency jobs. Does the same heavy hoisting and pulling as much more expensive equipment thus saving time and money. Quick set-up and safe, positive control.

PRICE $80

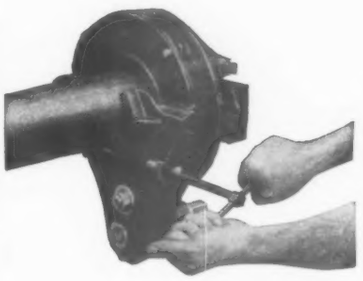
Steel Tail Hold Yoke $4 Extra. Truck Attachment Plate, $10 Extra

SOLD BY

The National Supply Companies

The NEW BEAVER

2½" to 4" Square End Pipe Cutter
SIMPLE! RUGGED! DURABLE!
NO BUSHINGS!



The tool is automatically centered on the pipe by means of V-jaws. No bushings!

With the same wrench the operator compresses the knives, causing them to feed automatically.

An ideal companion tool to the Popular No. 41 Beaver Die Stock 2½" to 4"

No. 104 Cutter is primarily designed for Power Drive use, but it is also a most efficient hand tool.

It is a "one-piece" tool. No loose bushings—nothing to become lost or mislaid.

Nickel semi-steel is used in the main castings therefore practically unbreakable—assuring low upkeep and high dependability.

Easy to operate and understand by the most unskilled operator.

Gear Driven — Front Drive — therefore an excellent companion cutter to the No. 41 Beaver Easy-Working Die Stock.

Knife breakage is practically impossible because of the safety guide ahead of the cutting edge of the knife.

Nothing to get out of order. Anyone can understand and use it—and built to withstand its full share of hard usage.

And—it is reasonably priced.

Other new Beaver items announced this year include the Nos. 8 and 8-R "Four-poster" for 1 to 2" pipe and Nos. 33 and 34 "3-Way" Die Stocks. Also bolt dies for the No. 3 Beaver Jr. If you would like a complete catalog, please write for it.

THE BORDEN CO., 520 Dana Ave., Warren, O.

Die Stocks Groovers **BEAVER** Pipe Cutters Power Units

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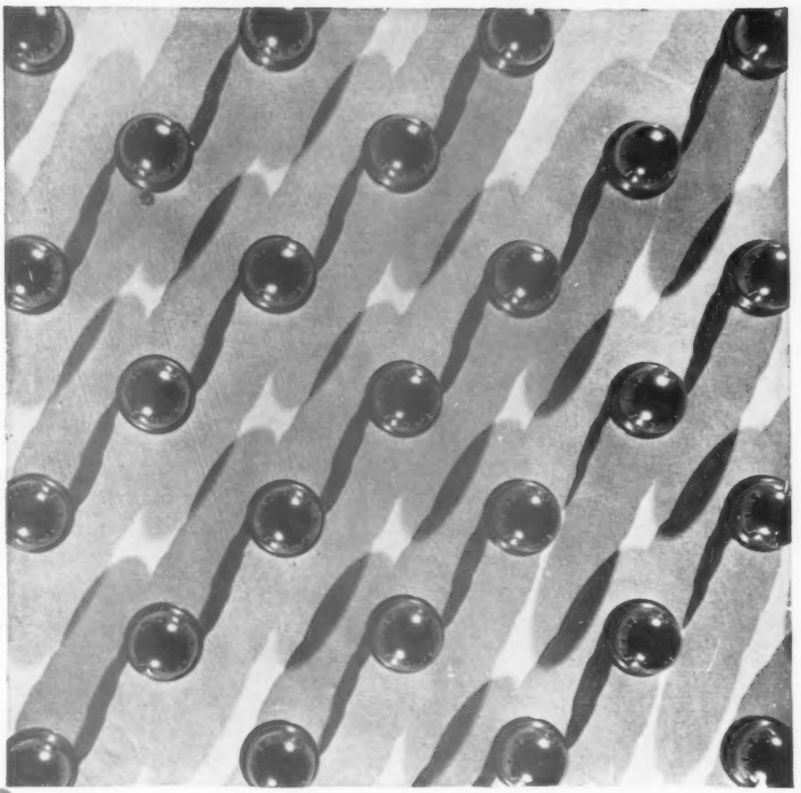

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